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The Late W. Butterfield.

THE death of Mr. Butterfield, at the advanced age of eighty-five, marks the close of a noble architectural career, and takes us back in thought to the commencement of the Gothic revival, and the great modern church-building movement, which have formed the most prominent and important phases of the architectural history of this country during the century which is just closing. But although Butterfield's name is associated with the Gothic revival, and though he, in fact, obtained his first recognition through that ultra-revivalist body, the Camden Ecclesiological Society, it is his special merit that he was something far more than a mere Gothic revival architect. He was an architect in the wider and fuller sense of the word; one who was not content with mere copying; whose mind was fixed on the practical as well as the sentimental aspect of architecture, and who studied to plan and construct churches as they were required—or at all events as he believed they were required—for the use of modern worshippers. And in the purely architectural portion of his work, while he was an enthusiastic admirer of mediæval architecture, he used it not as a mere model to copy from, but as a basis on which to work out his own architectural treatment, his own ideas of composition and detail. He was a man of far too individual and fervid a temperament to miss putting into all he did something that especially stamped it as his own. And hence, while so many learned imitations of mediæval churches, carried out under the sanction and with the sympathy of the ecclesiological pedants of the day, are to the present generation but as dry bones, Butterfield's churches have still a life of their own, and All Saints', Margaret-street, is as interesting an example of picturesque architecture as on the day it was completed. Here is surely a lesson, and one of no little weight and importance, to the young architects of the present generation.

Mr. Butterfield was born before the Battle of Waterloo; and at that time the temptation, to a young man with romantic notions and a taste for old buildings, to play at being mediæval, was stronger than we can in these later days imagine. The discontent of the times took many forms and was wide-spread. The outburst of poetry that signalled the new century touched the moral fibres of its hearers; the Church awoke. Its authorities were being questioned, and it proceeded to collect and review them. This retrospection into itself extended also to its buildings—the history of church architecture took its place beside the history of Church authority. Whilst the Tractarians at Oxford were examining the Fathers for the justification of their revival of Church teaching, the Camden Society at Cambridge collected evidence of Church doctrine and ritual as it concerned church building. The *Ecclesiologist* was started by the Society, Mr. Butterfield furnished some architectural contributions, their insight and ability were promptly recognised, and an acquaintance with the founders of the Society was made which forms the beginning of his practice. From the first he took the distinct position that, as church architect, it was his business to build churches for the congregations of to-day, not to construct replicas of churches that were designed for another ritual and another service than the one of to-day. Pugin, his contemporary, also accepted this view and joined the Roman Catholic Church, whose doctrines and ritual are substantially unchanged, and for whom the church of 500 years ago, which he set himself to reproduce, is as fit and appropriate now as it was then.

Mr. Butterfield was born and spent his youth and age in London. As a boy he knew Old London Bridge, with its houses doddering crazily over the parapet. Always meaning to be an architect, as soon as he left school he entered an architect's office in Worcester, where a sympathetic head-clerk, of an archæological turn of mind, fostered his taste for examining old buildings and analysing by-gone practices of construction. Together they explored the country round—the older man breathing a larger air on these holiday jaunts than was permissible during the office hours in the city, and sailing into the land of romance as a relief from the time devoted to the drudgery and details of a surveyor's work. The times were propitious. An immense mass of mediæval building dotted the face of England; much of it in grievous disrepair; much added to and botched by succeeding ages—but all genuine and full of authentic history. The minor arts were still extant in the land, although sunk into disregard and starved by neglect—traditional modes of construction, traditional handling of materials, still had force, especially where the influence of the cities did not stretch, though the workmen were getting sadly puzzled by the growing specialisation and subdivision of labour. The mason still knew where the stone that he was setting had lain in the quarry, and what were its humours and requirements. The carpenter could tell you the history of the oak he was planing—where the tree stood in the park, what time of the year it was felled, and how long ago. Centuries of experience lay in the receipts they quoted, in the methods they practised. The old buildings had an eloquence of their own. In silent speech they disclosed the weak places in their constitutions. In their war with the elements they showed how and where they had been worsted, a memorable education, in these days almost wholly denied to us. Butterfield was fortunate in his times, fortunate in his circumstances. Having learnt the routine of his profession and finished his terms as pupil, he devoted his time to observing exhaustively and recording the examples of old work in England. He voyaged into France and North Italy and there shook hands with the Middle Ages. The world he saw there has now quite passed away. He saw Paris a city of dark streets, paved with cobble stones, dimly lit with oil lamps and foul with open street gutters. Italy was still more mediæval—the passage over the Alps was an adventure

—the people were sulking under a foreign tyranny, Florence had its walls and towers standing round it; neglect of her monuments and buildings no doubt there was, but there was then no talk of either destruction or restoration.

Such were the circumstances amidst which Butterfield grew up; and when work came to him it found him a master both in the history and the science of building. The work came to him through the Past-president of the Camden Society, Beresford Hope, and the first important commission was the restoration of the old buildings of St. Augustine's, Canterbury, and the conversion of part of them into school buildings. Soon followed the commission for the church in Margaret-street. All Saints was the outcome of the Camden Society's propaganda, and was designed to serve as a model of what a London church should be. Henceforth Mr. Butterfield's position was assured. Though caviare to the general, it was felt that this was a work from a master-hand. The knowledge, and the individuality that was the assimilation and development of that knowledge, disconcerted the antiquarians and offended the ignorant. The design of the spire, the treatment of the bricks (at that date to build in bricks was not considered decent unless properly faced with stone or stucco), of the carving, of the ironwork, of the wall surfaces, the use of colour, were all a kind of surprise to those who relied on their book learning, and whose observation was neither wide nor profound. Still, through these bewilderments and novelties, the sincerity of the man shone out, and this church has ever been considered as one of the most deeply impressive that has been built in modern times. The conditions of the site were unpromising. A rectangular plot of ground, some 100 ft. by 110 ft., with no light on the north or east, and only a little, and that high up, on the west, was the site on which he had to plant a church and clergy-house. The church stands back from the street, and the little court, 11 by 15 paces all told, is made, by its treatment, to produce an atmosphere of reverent quietness; the buttress is aggrandised to emphasise the devotional aspect of the place; and the grave, quiet strength of the spire and tower protects and withdraws the entrance to the church from the hurry and littleness of the street. In a sense, it was the architect's confession of faith. While using Gothic forms, there was no attempt to make the building pass as a hitherto overlooked survival from the middle ages—he builds a church for the congregation of to-day to worship in; the chancel is as wide as the nave and unencumbered by any tall grille or screen, so that all may see clearly the ministrations. So in other cases: his churches are for to-day's use. The entrances are put at the west end and generally a narthex is formed, so that early and late comers may enter and retire without disturbing the rest of the worshippers, the seating is exactly calculated, the position of the gas lights and pipeing planned for from the outset—no detail of ritual is unprovided for.

It is this loyalty to existing fact, this sincerity of purpose in every part of his buildings, which gives them their straightforwardness, manliness, and quiet strength. His buildings, in consequence, have many of the qualities we admire in old work, their dignified common sense as to the requirements of their position. In all his work one is conscious of a reserve of power; he attains impressiveness and dignity without straining for them. There is mystery and romance in what he does, but got so simply and ingenuously that, though the effort is unquestionable, the means seem quite ludicrously inadequate. Mr. Butterfield's plain speaking, in bricks and mortar, has been labelled austerity, and the epithet betrays the recognition of the quality of sincerity. His buildings have a character that belongs to our times and to our needs, have a beauty that touches us, the beauty of an earnest soul. His materials pleaded with him; he saw their attributes and reverenced them, and his buildings look happy in consequence. To him a brick was more than to other men. In addition to its other qualities it had colour, and he elaborated a painted decoration for his walls. Securely patient, he waited for time to justify his brush—to blend the violent patterning of many coloured bricks to a rich harmony, as in Jesus College, for instance, at Cambridge; and time is faithfully doing him that office.

This knowledge of the qualities of his materials gave his work, too, a local flavour. The little church at West Lavington, built of homely materials, with its shingle spire, nestles amongst the fir trees as if it had grown there with the wild strawberry and the heather. At Babbicombe (near Torquay) the church is built of Devonshire marble, which he used as if he loved it. A romantic conception of what architecture should be, stamps his work with a permanent interest. Amongst the works of this century, his must take a foremost place. Time may do him a better justice, and posterity will ever see in his buildings the courage of his conviction, the passion of his sincerity, and the loftiness of his aims.

THE GENERATION AND USE OF ACETYLENE.

THE increasing number of country residences and villages in which acetylene is being adopted as a source of light renders some acquaintance with the appliances required for a complete acetylene installation, and with the precautions to be observed in its erection, a matter of considerable importance to many of our readers, since they are liable to be called upon at any moment for advice regarding the selection and erection of an acetylene plant for some particular purpose.

Many firms now supply patented acetylene generators, and each vendor usually claims that his is the best and only reliable form of apparatus. The recommendation of any particular brand of manufacture does not lie within our province; and although for the purpose of describing the different methods of generating acetylene by the reaction of water upon calcium carbide, we have illustrated two or three of the generators now on the market, it must be distinctly understood that these are merely referred to as types of the multitude of generators in use at the present time. Many generators constructed in accordance with different patent specifications closely resemble one another, and to describe each individual apparatus would be impossible in the limited space at our disposal.

In 1898 the Society of Arts appointed a committee of experts to examine and test each generator seeking admission to the exhibition held at the Imperial Institute in that year, and those which were found to work satisfactorily for a period of one month in the exhibition were granted a certificate.* This committee divided the generators into the following three groups:—

1. Those in which the gas is generated by water being allowed to drip or flow in a small stream on to the top of carbide.

2. Those in which water rises around the carbide.

3. Those in which the carbide falls into water.

These were again subdivided into:—

(*a*) *Automatic.*—By automatic generators are meant those which have a storage capacity for gas less than the total volume which the charge of carbide is capable of generating, and which depend upon some special contrivance for stopping contact between the water and carbide.

(*b*) *Non-Automatic.*—Non-automatic generators are those in which a holder of sufficient capacity is provided to receive the whole of the gas made from the largest charge of carbide which the apparatus is capable of taking.

The cost of the comparatively large gas-holder required for a non-automatic generator and the increased ground-space it occupies are the disadvantages of the latter description of generator; but these disadvantages are, in our opinion, more than compensated for by the greater simplicity and diminished risk of accident which accompany the working of a good non-automatic apparatus. We are well aware, however, that many automatic generators are at work in various parts of the country, and are said to be giving complete satisfaction.

In selecting a generator of any description, attention should be given to the following items:—

1. Excessive heating should not occur during the decomposition of the carbide. The lime sludge left after the decomposition of the carbide should be white or light grey, not yellow or black with tarry matter.

2. The air space in the generating chamber should be as small as possible in order to avoid production of an explosive mixture of air and acetylene when the apparatus is first employed. In any case it is advisable when first working a generator to "blow off" the first small quantity of gas obtained, at a point far removed from any flame.

3. An arrangement should be provided by which, if the gas outlet from the generator becomes choked, the gas may escape into the open air without injury to the apparatus.

4. No lumps of undecomposed carbide should be found buried in the sludge upon cleaning out the generator.

5. Not less than 4¾ cubic feet of gas should be obtained from a pound of good commercial carbide.

The illustration of the non-automatic generator manufactured by the "Ideal Gas Company, Limited," of Blackburn, represents (fig. 1) an acetylene generator of the simplest form. Carbide is placed in a perforated zinc basket, which is placed upon the supports within the generating chamber, as shown. The basket is inserted or removed by taking off the cover, which is held in position by a

* For list of successful firms see *The Builder* (vol. lxxvi.).

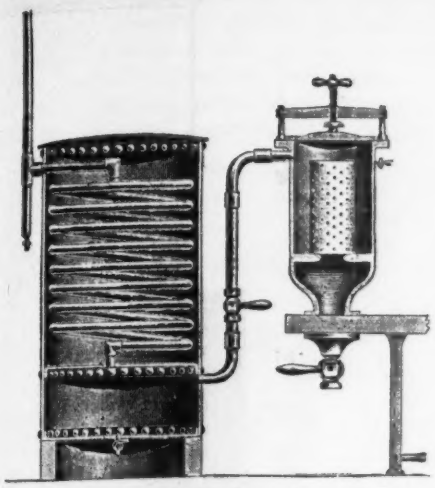

Fig. 1.—Section of "Ideal" Generator and Condenser.

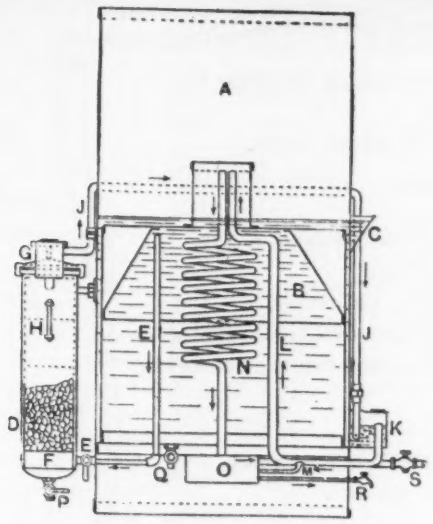

Fig. 2.—Section of Thorscar Generator.

REFERENCES.

A. Water tank.
B. Gasholder.
C. Water lip.
D. Generator.
E. Water supply to generator.
F. Carbide cage.
G. Purifier.
H. Generator water gauge.
J. Gaspipe from generator.
K. Water lock.
L. Gaspipe from water lock.
M. Drain from
N. Condensing coil.
O. Condensing coil box.
P. Generator drain cock.
Q. Water-tank drain cock.
R. Condenser drain cock.
S. Gas supply to burners.

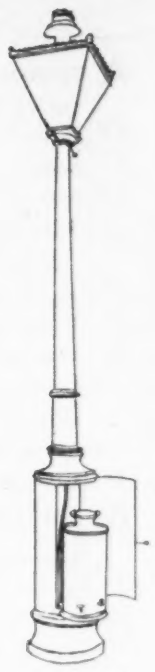

Fig. 4.—"Acetylite" Generator applied to Street Lamp.

screw and cross-piece. Water enters the generator from a supply-tank through a small side-cock situated below the bottom of the carbide basket. The water slowly rises within the generator, and soon comes in contact with the lower portion of the carbide. Should the generation of gas be too rapid, the pressure of the gas within the generator forces back the water to the tank until its level is below that of the carbide in the perforated basket. The gas from the generator passes through a condensing coil, from which condensed liquid is from time to time drawn off. From the condenser the gas passes into an ordinary gasholder. When the carbide basket is completely flooded with water and gas ceases to be evolved, the water-supply cock and the cock between the generator and condenser are closed, the sludge in the generator is removed by opening the lever cock at its base, the carbide basket is removed and cleaned, and the apparatus is then ready to be recharged.

When the quantity of acetylene required is large, a number of these small generators are connected to one gasholder in the form of a battery. This is preferable to making one large generator, because in decomposing a large bulk of carbide in this manner the heat accumulated within the generator during the period of decomposition would be apt to be excessive.

In the "Thorscar" generator, manufactured by Messrs. Lockerbie & Wilkinson, Limited, of Birmingham, water rises slowly around the carbide. A vertical generator is attached to the side of a gasholder, from the tank of which the supply of water for the generator is taken. The connecting supply-pipe between the generator and gasholder tank is so fitted that when the gasholder bell (which has a displacement cone within it) is in its lowest position, the water-level is above the top of the pipe, and, consequently, water flows down the pipe and rises within the generator to the carbide, which is contained in perforated cages or trays. The gas produced escapes from the top of the generator to a small charcoal purifier or scrubber and from thence through a water-seal to the gas-holder, the bell of which rises and causes the level of the water in the gasholder tank to fall below the level of the open end of the generator supply-pipe. The generator of gas gradually ceases, and no more water flows to the carbide until the withdrawal of gas from the bell causes it to sink and again raise the level of the water in the tank until it is above the open end of the supply-pipe.

The gas on leaving the gasholder passes through a long condensing coil fitted within the gasholder tank, and any liquid which may be formed is drawn off from the catch-box at the bottom of the coil.

The generator manufactured by Messrs. Strode & Co., of London (fig. 3), belongs to that class in which the method is adopted of automatically discharging small quantities of carbide into a comparatively large volume of water. The carbide container is situated above a revolving cone having a spiral chamber, into which the carbide falls by its own gravity. This cone is actuated by a water-wheel, each movement of which causes a charge of carbide to be discharged into the water within a perforated basket fitted within the generator tank beneath.

When water is discharged into one of the pockets of the water-wheel until the pocket is filled, the wheel turns a quarter revolution. The discharge of water into the pockets is regulated by the rise and fall of a gasholder bell, the walls of which displace the water in the gasholder tank and cause it to overflow upon the wheel when the bell sinks to a certain position owing to gas being withdrawn from it. The water which rotates the wheel falls subsequently into the generator tank, which is provided with a suitable overflow arrangement.

In order to maintain a constant level of water within the gasholder tank when gas is not being withdrawn from it, a water-regulating tank, fitted with double ball-valves and an overflow, and connected with the water main, is provided. A box-shaped cover slips over the carbide container and water-wheel, and dips some distance into the water, thus forming a gastight seal.

The generator manufactured by "Acetylite, Ltd.," of Birmingham, is another form of automatic generator in which carbide is allowed to fall into water. One use to which this has been put is for adapting acetylene for street lamp-posts. Each lamp-post contains a complete acetylene plant, the generator being contained in a lock-up chamber at the base (fig. 4), while the gas is led upwards through the interior of the column to the acetylene burner, which is encased in a suitable lantern. The Acetylite Company states that it has already erected a considerable number of these acetylene lamps in England, and has over a thousand of them at work at on the Continent. This company also manufactures a portable acetylene apparatus for use in brazing, soldering, and lacquering.

Owing to the large proportion of carbon contained in acetylene ($C_2 H_2$) much difficulty has been experienced in devising a suitable burner for the consumption of this gas. Hitherto it has been found necessary to burn the gas at a higher pressure (2 in. to 4 in.) than that under which coal gas is usually consumed, and to make the burner orifices so small that the consumption of each burner seldom amounts to 2 ft. Immediately an attempt is made to largely increase the consumption and obtain a corresponding increase in illuminating power, a smoky flame is obtained. The consumption of the majority of the burners now in use is from three-fourths to one cubic foot of acetylene per hour. The light equivalent of the flame varies from thirty to forty candles per cubic foot of gas. Burners of the "Naphey" type (fig. 5) are those most extensively used, but even these become choked with carbon in the course of two or three weeks or even sooner.

The steatite nipples of these burners have inclined air-channels bored through them just below the burner orifices, and the presence of these channels appears to diminish the tendency of the burning acetylene to deposit carbon in the orifices. As the illuminating value of the flame does not appear to be materially affected, it must be assumed that little or no air actually mixes with the acetylene undergoing combustion.

The "atmospheric" burner (fig. 5), in which acetylene is purposely mixed with air to produce a non-luminous flame having a heat intensity much greater than that of a corre-

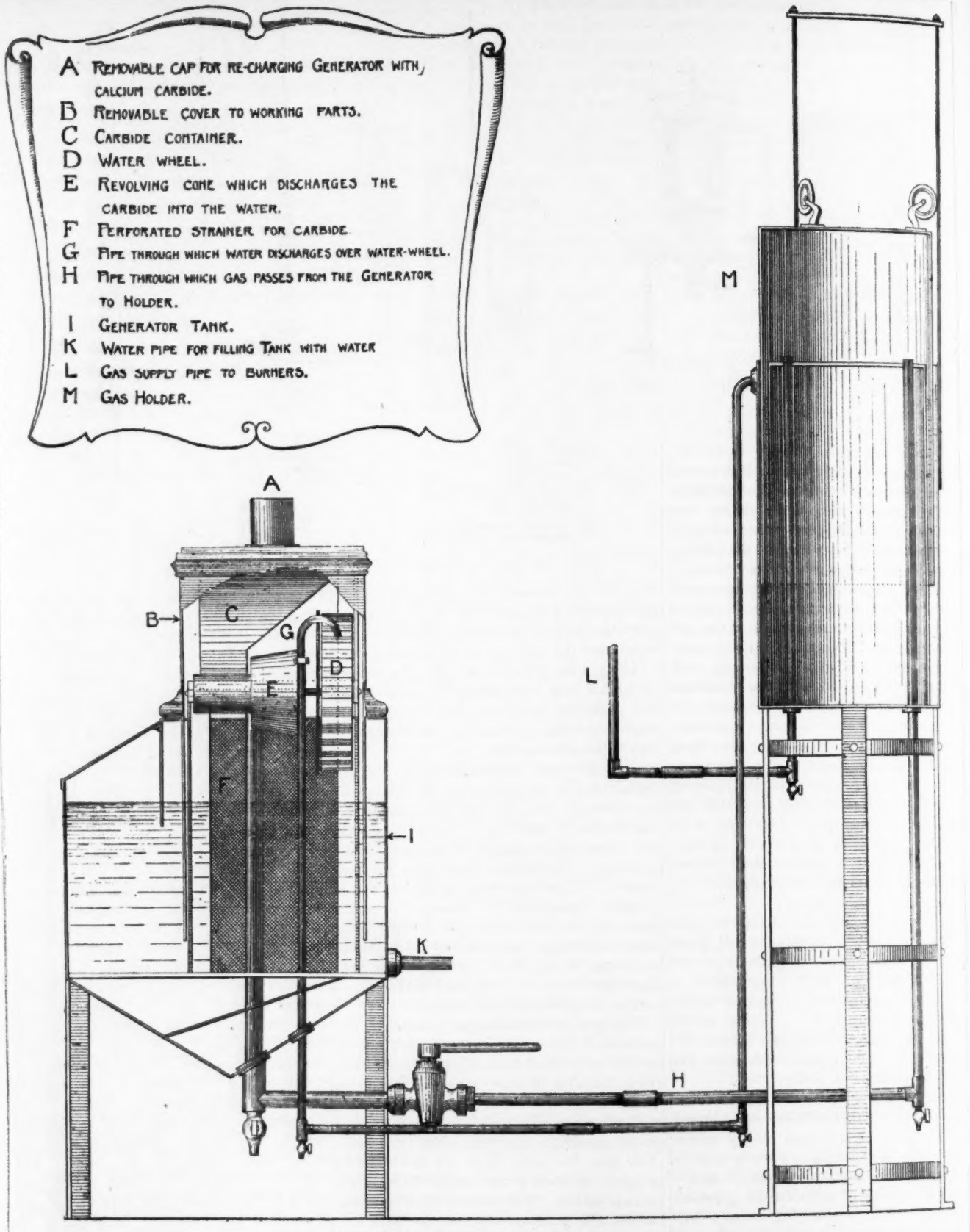

Fig. 3.—Section of Strode's Generator and Gasholder.

sponding coal-gas flame, has not yet been very largely employed, partly because the burners invented for the purpose have not been found altogether satisfactory, and because it has been found that the burners must be supplied with acetylene at a comparatively high pressure. When acetylene is adopted for domestic heating purposes burners having luminous jets, which are not allowed contact with the article to be heated, are usually employed, but when applied to incandescent gas lighting it is necessary to secure a non-luminous flame.

We give illustrations of a "ring" burner and a "batswing" burner for acetylene (fig. 5), but neither has yet been very extensively adopted in this country, although the latter, under favourable conditions, will often give a high illuminating value.

Purification.

Finally, a few words may be added regarding the necessity of purifying the acetylene before allowing it to pass to the burners. For outdoor illumination, if good carbide be employed, purification is unnecessary; but for indoor use it is usually recommended that the gas be previously purified. Removal of the main portion of the soluble and condensable impurities by passage through a washer and subsequently through a condenser is undoubtedly desirable; but we consider that more disastrous results are likely to accrue from placing acid cuprous chloride and bleaching powder in the hands of the ordinary domestic servant than from the use of unpurified gas. Nevertheless, wide publicity should be given to the following utterance of Professor Lewes upon the subject in a recent number of *Feilden's Journal*. He says that "although the purity of commercial carbide

has greatly improved during the past two years, it is absolutely essential that the gas should be purified after leaving the holder, and before consumption, from phosphuretted hydrogen and sulphuretted hydrogen, which it always contains, whilst the

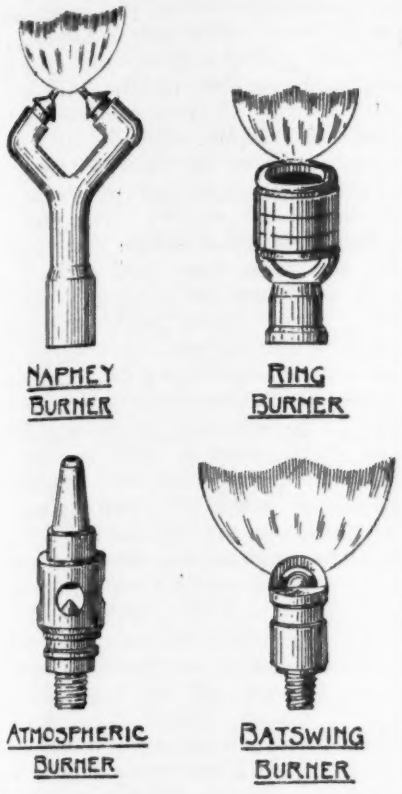

Fig. 5.—Four Forms of Acetylene Burner.

elimination of ammonia in the gas is also of importance. At the present time in England the purifiers most in vogue are those working under Frank's system, in which the gas is purified by passing it through an acidulated solution of cuprous chloride, which is used to saturate kiesulguhr or other absorbent material, and the bleaching powder purifiers manufactured by Thorn and Hoddle. It is important, however, in using either of these, that the gas should be made to pass after purification through a small chamber containing quicklime, to absorb any fumes which it may have obtained from the purifying material."

When the gas is distributed from a central manufacturing station it should undoubtedly be purified as rigorously as is ordinary coal gas, particularly if it be true that the white "haze" commonly observed in rooms where acetylene has been burning for a long period is entirely absent when purified acetylene is consumed; we believe, however, that the majority of acetylene consumers in this country are still burning the unpurified gas.

We strongly advise intending users of acetylene not to allow a generator to be placed in any building in which the presence of the peculiar odour of commercial acetylene would be an annoyance; not to be persuaded to place the generator in the basement, but insist upon its being fitted at a suitable distance from the house, and connected to the house by service pipes which remain perfectly gas-tight when tested under a 10-in. gas pressure. If the generator be fitted within the house, the odour of the gas will probably be noticeable throughout the entire building when the generator is being cleansed and re-charged.

Where acetylene installations have been erected by men conversant with the nature of acetylene and the conditions under which it is manufactured, great satisfaction with the new illuminant has been expressed; where generators have been fitted to existing gas services by incompetent fitters, the generators have often been discarded and acetylene "condemned."

NOTES.

The Workmen's Compensation Act Again.

THE number of decisions on the Workmen's Compensation Act multiplies so rapidly that it is more than the layman can do to keep abreast of them. Yet if ever there was a statute whose interpretation should be capable of being known by all who are employers or workmen it is this Act. The last decision of importance was given last week, and, shortly stated, it has this result. A sub-contractor is not an undertaker within the meaning of Sub-section 2 of Section 7, and, therefore, is not liable if one of his workmen is injured, but the principal contractor is the person liable. Thus—as in the case in point—if a building owner contracts with a builder to construct a house, and the builder enters into a sub-contract with a painter to do the painting work, the workmen employed by the painter must sue the builder for damages. The case is different if the building owner himself enters into a contract with the painter to do this part of the work; then the painter is the undertaker, even though there is a builder who has all the rest of the work to do. Having pointed out the results of this decision there is only this to be added, that it is a judgment which appears to have a wider scope than many which have lately been given on this Act. It is one which is more based on principle, which can be better applied to various sets of facts, than the numerous judgments which have had no application beyond the special facts of a particular case, and which are positively misleading if relied on as precedents.

The Manchester Sewage Question.

NOTWITHSTANDING the Report of the three experts, which we discussed a few weeks ago, there is still strong opposition to the scheme for the bacterial treatment of Manchester sewage. At the last meeting of the Council, the Rivers Committee, which has the matter in hand, asked the Council's approval of an attempt to induce the Local Government Board to relax its regulations as to land-treatment of the filtered sewage, but the resolution moved by Sir Bosdin Leach was only passed after a clause had been added "reserving to the Council the right to abandon the scheme (*i.e.*, bacterial treatment) if found desirable when the detailed plans, sections, and estimates of cost are placed before the Council." The chief objections to the scheme are the cost and the fear that bacterial treatment will not give satisfactory results with such large volumes of sewage. Numerous letters have appeared in the Manchester papers for and against the proposal, but some of the writers seem desirous of scoring a victory over their opponents rather than of ascertaining the truth. Much vexation and loss would be avoided if the Commissioners, who are now investigating the whole subject on behalf of the nation, would issue their Report. We fear that the Manchester Council will have little chance of getting the Local Government Board to alter its requirements before this Report has been issued.

London Gas.

THE approaching contest between the London County Council and the metropolitan gas companies concerning the official recognition of the portable photometer and various other proposals contained in the several gas Bills to be considered during the present session of Parliament, is likely to result in some important changes in the conditions of gas supply within the metropolis. In the first place, the adoption of the portable photometer with the retention of the 16-candle standard would necessitate the supply of a more highly enriched gas, which in turn would result in the immediate rise in the prices charged. And the consumer who obtains the richer gas at a higher price will not obtain a proportional increase in lighting or heating value for his extra expenditure. Meanwhile, although it is admitted by the Chairman of the South Metropolitan Gas Company that half the gas supplied by that company is used for purposes other than lighting, yet we are, we believe, correct in asserting that the London County Council have taken no steps to introduce a heating-power test. It is well known that the illuminating power of a gas is not a criterion of its calorific value, and that a 16-candle enriched water-gas may be manufactured which does not possess so great a heating value as that of 16-candle coal-gas. As an aid to smoke-abatement, and in the interests of manufacturers, and of the gas consumers generally, we are of opinion that the supply of a low-grade gas (say 14½-candle power) at a minimum pressure of 1½ in. of water, and possessing a minimum calorific value (to be fixed by Act of Parliament) would be of more utility than the supply of a higher grade gas of uncertain heating value at a higher price. The present statutory minimum pressure is absurd; most of the complaints of bad gas should be complaints of insufficient gas.

The Standardisation of Electrical Plant.

THE discussion at the Institution of Electrical Engineers on Mr. Sellon's paper on "The Standardisation of Electric Engineering Plant" was concluded last week. Mr. Sellon defined standardisation as such an understanding amongst buyers as to the ends to be desired that manufacturers will be enabled to go in for quantitative production. Mr. Crompton thought that standardisation would come by natural evolution, and instanced the case of small motors for ventilating and cooling purposes where the great demand had enabled makers to standardise the sizes and so greatly lower the cost. Professor Ayrton pointed out how advantageous standardisation had been in America. The great manufacturing combines have a type for any class of machine, and this they will not alter to suit the individual tastes of the buyer. It does not mean, however, that no progress is being made; on the contrary, they are always busy inventing and experimenting, but they do not displace the old type until the new type has been thoroughly evolved. Professor Ayrton thought that things would soon remedy themselves in this country if manufacturers would state exactly the properties of the machines they made. For example, they ought to state

exactly the insulation of their dynamos, the rise of temperature of their armatures after working for some time at full load, and so on. If they did this the complaint that consulting engineers specified impossibilities would soon cease. Mr. Sellon in his reply summed up the discussion as follows. It seemed to be admitted that standardisation was desirable, and that it was more advanced on the Continent and in America than in this country. Again, it was practicable in the electrical industry because we are still at the dawn of electrical engineering. In his opinion, also, if the subject of standardisation were promptly dealt with by a Committee of the Institution of Electrical Engineers it would be a very great boon to the industry.

The Nicaragua Canal Scheme.

BEFORE the commencement of operations with regard to this gigantic work, the United States Congress will do well to allow time for the collection of full information as to the nature of the problems which will have to be solved if satisfactory results are to be attained. One such problem has lately been raised by a correspondent in the *Scientific American*, and the point in question refers to the regulation of the summit level of the lake and canal. This is unquestionably a most important matter, and in respect of which there is need for much more complete and reliable data than are at present available. Nearly every engineer who has inquired into the merits of the Nicaragua project has expressed the view that upon the proper control of the summit level depends the success of the whole scheme. A Report made in 1895 by General Ludlow upon the projected undertaking of the Maritime Canal Company is perhaps as impartial and comprehensive a summary as any which has hitherto been formulated, but unfortunately the Commission was not accorded sufficient time for conducting the necessary gaugings, and for obtaining the requisite hydraulic and other data essential for a complete report. It is by no means clear what is the extreme low-water mark of Lake Nicaragua, as this point has been variously estimated from 102·28 ft. down to 97·6 ft. above mean sea level. Briefly stated, the problem of regulation is as follows:—A minimum summit level must first be determined, at which the minimum depth of water will be maintained, and if during the dry season the net effect of sundry natural and artificial conditions is to reduce the minimum summit level of the lake and of the canal, then sufficent storage accommodation must be provided, so that compensation may be made for the volume of water lost. In addition to maintenance of the summit level, there arises the problem of controlling the discharge of surplus water during the rainy season. This is not so difficult a matter as the other, and the Walker Commission, by whom the subject of the canal is now being generally considered, proposes the construction of large movable weirs, both on the San Juan River and on the Rio Grande, those on the former with a maximum capacity of 85,000 cubic feet, and on the latter of 20,000 cubic feet per second. The suggestion of this Commission with respect to control is that the maximum elevation of the summit level should be 110 ft., and the minimum 104 ft. above mean sea level. At the approach of the dry season the level would be 108 ft.; during the same season the height would be reduced to 106 feet, and allowed to rise in the rainy season to 108 feet, when the weirs would be opened for the prevention of further increase. A margin of two feet at each end of the scale is thus allowed for contingencies. From the very rudimentary details given above, it may readily be gathered that the problem of regulation is one of no inconsiderable magnitude, and upon the proposed basis of the Walker Commission the storage reservoirs must be of very ample proportions if they are to provide for raising the level of the lake by four feet over its entire area.

Old Kensington.

Two or three months ago attention was directed in the daily Press to the then sorry condition of Mrs. Inchbald's grave in Kensington parish churchyard. We notice that the reproach has since been removed by the cleaning of the grave-stone. The burial there of the author of "A Simple Story" and "Nature and Art" is due to the circumstance that she passed the closing years of her life in Kensington. In 1817-8 she lived at a boarding house kept by a Mrs. Voysey, in Leonard-place, nearly opposite Holland House, whence she removed to another boarding house, at No. 4, Earl's-terrace, next west to Leonard-place. The last two years of her life were spent at Old Kensington House in the High-street—at that time a Roman Catholic boarding house kept by the Salterellis—where she died on August 1, 1821. In an adjacent grave, marked with a headstone carved by Chantrey, lies George Charles Canning, *obiit* March 31, 1820, aged nineteen, eldest son of George Canning, who composed the lines of the epitaph. Kensington House, distinguished by its wrought-iron gates, and having a large garden with an avenue of trees at the rear, was latterly occupied as a private lunatic asylum; it was pulled down twenty-eight years ago for the late Albert Grant's never-completed mansion, which in its turn gave place to Kensington Court. Having been originally the residence of a Royal mistress, Louise de Querouaille, Duchess of Portsmouth, it was afterwards the home and boys' school of James Elphinston (1770-88), the harmless pedant whom Smollett ridicules in "Roderick Random," the translator of Martial, and friend of Jortin, Franklin, Strahan the King's printer, and Dr. Johnson. "I am going this evening to put young Otway to school with Mr. Elphinston," writes Dr. Johnson to Mrs. Thrale, on March 25, 1773.* The house next became, as Shiel records in his memoirs, a college established by the Pères de la Foi—as the French Jesuits then settled in England called themselves—with M. Le Prince de Broglie, son of the Marechale, as headmaster, and was frequented by emigrants of the highest rank, amongst them being Charles X. We observe, too, that new gateways are being built on either side of the two old piers (of red brick now plastered over), carrying the Royal arms and supporters at the south end of the road leading out of the High-street to the Palace, which have their counterpart in the two similar piers (excellent specimens of brickwork) on the west side of the recently renovated Banquetting house or Orangery on the remoter side of the Palace.

* The memorial tablets to Elphinston (1804), and Reginald Spofforth (1827), composer of "Health to my Dear," are in the south porch of the new church.

The Fine Arts Society.

AT these galleries there is an exhibition of Dutch life and landscape painting by Mr. and Mrs. Adrian Stokes. Although Holland has an inhospitable reputation for foreign artists, it has of recent years been the happy hunting ground of many of our younger men. It is a sketchable country with picturesque people, curious fishing craft of the Zuyder-zee, cattle grazing on green meadows cut up with canals, and fine expanses of distance to level horizons. The present collection of the work of Mr. and Mrs. Adrian Stokes is very representative of this variety of tempting subjects, and has the fine quality of colour peculiar to the country. This effect is helped by the use of antique Dutch frames and mouldings; where gold frames have been used they are of a very subdued tone. Mrs. Adrian Stokes shows the people in their costumes, charmingly quaint; the method adopted being the *gesso grosso* of the early Italians; with it she has achieved some of the soberness and feeling of devotion characteristic of early art. No 12 St. John (*gesso grosso*) the only sacred subject, is evidently painted by way of recreation from the severer work; it is the broad treatment of these Dutch figures that gives a deeply-satisfying feeling not often met with in a modern exhibition. Nos. 2 and 3 are representative, the quaint conventional treatment of the "Friesland Orphan" (*gesso grosso*) and the bright coloured healthy "North Holland Girl" in water colour. No. 7 is peculiarly decorative in treatment, both in the dress of the Mother and child, and in the distance with its characteristic windmill. Nos 56 and 60 are also charming renderings of Little Hollanders. Mr. Adrian Stokes has confined his attention to painting the landscape and a few seascapes. The Zuyderzee has been described as a muddy pond, a description often justified by artists' rendering of it; in No. 63 the delicacy of colour has been preserved without the heaviness of most rendering of mud. Nos. 55 and 62 are happy pieces of cloud effect and wild landscape. In lighter mood is No. 31, a still, deep pond bordered with tall, soft grasses, the water a dainty blue reflecting fine clouds otherwise beyond the vision of the picture; the pleasant touch of life is introduced in the white-washed cottages. No. 17 is perhaps the best of the bare tracts of country, with pines and grazing cattle.

Modern Handicrafts.

AT Mr. Montague Fordham's showroom in Maddox-street are many of the exhibits from the exhibition of the Arts and Crafts recently held at the New Gallery. Mr. Barnsley's inlaid wood music cabinet, the best piece of furniture exhibited there, is for sale; also many pieces of silver work by the Birmingham Guild of Handicraft, the shapes of which, by the way—with a few exceptions—are not at all beautiful. There is some good carpenters' furniture and two painted screens from the same exhibition. A small special exhibition consists of silver-point drawings, drawings on vellum, of gesso work, and shagreen. Shagreen is the skin of the shark ground down with extraordinary patience to a surface resembling beautifully granulated marble; England used to be famous for this skin. Mr. Paul Cooper is reviving this work, and has produced some very pretty little boxes, covered with the skin, with silver mountings. Two jewel cases in gesso

by the same artist are very beautiful, and illustrations of them we shall shortly publish. The silver point drawings are by Messrs. C. M. Gere, J. E. Southall, and A. J. Gaskin. Mr. Gere has done excellent book illustration, with a strong pen line in a primitive manner, and it is somewhat surprising to see weakly drawn and niggled sketches of architecture from the same hand. His heads on vellum are beautiful water-colour drawings. Mr. Southall's silver points show most poetic treatment of the figure, combined with rather lax proportions. Mr. Gaskin's heads in this method are also good work.

THE ARCHITECTURAL ASSOCIATION.

THE ordinary fortnightly meeting of the Architectural Association was held in the Meeting room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, W., on Friday last week, the President, Mr. G. H. Fellowes Prynne, in the chair.

The minutes of the last meeting having been read and confirmed, the following gentlemen were elected members—viz., Messrs. E. G. Cole, J. H. Peacock, J. Bruce Merson, A. Wingate, H. G. Coyne, and J. H. Watkins. Messrs. L. Cabuche and F. E. Ravenscroft were reinstated as members.

On the motion of Mr. R. S. Balfour, Hon. Sec., a vote of thanks was accorded to Messrs. Alfred Waterhouse & Son for allowing members to visit the University College Hospital extension works on February 10, and to Messrs. A. Dunbar Smith and C. C. Brewer for allowing a visit to the Passmore Edwards Settlement, Tavistock-place, on the same date.

The Chairman announced that Mr. W. H. Seth-Smith had given a donation of 10*l.* to the library fund. A vote of thanks having been accorded to the donor,

Mr. A. W. Hennings read the following paper, entitled :—

The Exterior Treatment of Sharp or Acute Angles in Street Buildings.

"Mr. President and gentlemen,

The subject of the paper this evening, 'Exterior Treatment of Sharp or Acute Angles in Street Buildings,' may seem to some rather far-fetched, and indeed it is hardly one that comes in student or class days, but sooner or later, when you get into active practice, you will have a site that is not right-angled, one whose prominent corner is much less than a right angle, and then you will find it indeed a difficult problem. First of all, the plan will trouble, for it is very obvious that the sharp angle is of no good to you—the ground enclosed is so small that it is clearly a waste of material to enclose it with bricks and mortar, and yet in a town the land is so valuable that the owner naturally does not like to sacrifice a square foot without a very good reason. Then again, the very prominence of the angle seems to fit it especially for a business entrance ; but whilst its position is apparently so suitable for that purpose, it is clear that an entrance so placed must mean long passages and consequent waste to reach the farthest parts of the building. I do not propose to-night to follow up this question of plan of the structure beyond the angle, but mention it in passing as one of the factors that will have to be considered. My attention to the subject was caused in the usual way, viz., having to design various buildings to fit angular sites. After a few attempts, it struck me that the best thing to do was carefully to observe what had been done in such instances, and I was somewhat amazed to find how many times the problem had been attempted, and also that very few of the attempts could be called really successful. The recent cutting of important new streets through old localities has resulted in the formation of many difficult sites, and, after carefully looking at the various treatments, I have come to the conclusion that they all fall under one of two heads :—First, the architectural lines of the two façades are simply returned across the sharp angle ; secondly, a distinctive treatment to exprens the angle.

Now, the first method is the easiest and cheapest. It is, therefore, most generally used, and, although it is really an avoidance of the problem, it is not therefore bad—indeed, I hope to show you some very good effects ; and as long as there is only a flat roof to the building there is no difficulty ; but directly a pitched roof is required it is easy to see that the junction of the ridge running parallel to each front must meet at a great distance back from the angle, and will want something to mask it, whilst if the angle enclosed is so small that one roof only can be used for a covering, the result will be a ridge rising towards the broadest part, and I venture to think it will pass the wit of man to make such a roof presentable on the exterior.

To return to the plan. The first thing that suggests itself is to cut off the useless point—in fact to truncate the angle—and the amount so cut off will depend chiefly upon how much land your client is willing to sacrifice. If it is only a little there will be only a narrow face to treat, and possibly the best thing for this is to carry the strings and cornices round and vary the windows, but it is surely the most bald way of treating it by simply cutting off the angle—and some views will be shown you that bring out this poorness of design very clearly. The right thing to do seems to be a small return at right angles to the façades and then fill up the intervening space with a wall at right angles to the bisection of the angle. This at once gives interest, and not only satisfies the eye with proper mitres to the strings and cornices, but serves a second useful purpose by well enclosing any detail put on the end. Do not in any case put a distinct feature on to the end unless you so enclose it—for the inevitable result is that the said feature will look stuck on and not grow, as it should, out of the structure.

If, however, a considerable angle can be cut off so that there is a reasonably wide face to treat, you will at once have room for special features if the site and purpose of the building warrant it ; but the before-mentioned right-angled returns to the façades are absolutely necessary to enclose and mark it.

Another way is to sacrifice the point and join the two façades by means of a curve. This is the most popular way to judge by the number of times it occurs in our streets, and any treatment of this must be ruled by the smaller or greater radius of the curve. If small, there is very little scope, and perhaps the best thing is to simply run the strings to cornices round it ; but this requires care, as you will clearly see by the effect of a building in Queen Victoria-street. Again, the necessity of right-angled returns to the façades must be borne in mind ; the curve is so much more clearly defined by their use, and the breaks, be they small or great, at once give a chance to enclose a special feature. Still another way to enclose the curve is by means of projections taking the form of pilasters or strips—examples of both will be shown—and there is a very notable example of the bold effect of this treatment in Mappin & Webb's premises at the junction of the Poultry and Queen Victoria-street.

There are also samples, and good ones too, where there is no break or mark, but the effect there seems to have been produced by reason of the great size of the curve, and it is really the façade continued and can hardly be called a treatment of an angle site. Returning to the smaller curve, the natural growth upwards seems to be towards some sort of turret, and it is in this that there are so many failures. So long as the features are enclosed by the lines of the building they are kept in their places, and unless very strange and uncouth do not greatly offend. But directly they get clear and are outlined against the sky and have to be judged on their own merits, the difficulty begins. Here it may be remarked that no amount of ingenuity displayed in the formation of a turret by transitions from octagons to circles and back again—with all sorts of cunning and spicy detail will atone for the lack of pleasing outline. Many of the competition designs published in our technical journals show this extreme cleverness, but when any of them are carried out, somehow the result is not so good, and with humiliation one has to confess that the sober, simple outline to be seen on so many stable turrets erected last century are much more satisfactory than the clever but laboured productions of the present day. They are to my mind products of that unrestfulness so typical of the times.

As to the window treatment of the curve, the size must determine how many windows there shall be at each level. If very small, a blank end will probably be best, for lintels or arches put on a small curve have a very uncomfortable and weak look from certain points of view. This is, perhaps, a truism, but you will find modern examples of the error.

There are some very satisfactory treatments where a pier is at the centre of the face of the curve with windows each side, and certainly the effect is strong ; it seems to efficiently buttress the angle. The introduction of a doorway at the base of the curve does not seem very desirable, although it is frequently done, but it tends to weaken the appearance, and its details will inevitably break the clean sweep of the curves.

Another point for consideration in the treatment of an angle or of a curved end is—how many of the horizontal features of the façades should be taken round or across it. Some are necessary to tie it in, but if all are taken across the result seems to be merely a continuation of the façades, and it will, I think, be very clearly shown by the views that the most successful of the designs are those where the principal and strongest features are used, the subsidiary ones being stopped by a pier or return.

In City buildings, however, the most difficult place to treat properly seems to be the shop front. If there is no door the angle is obviously a splendid place for the display of goods, and piers sufficiently substantial to satisfy the eye are seldom allowed. This is a lamentable fact, but still it is a fact that you will have to deal with ; one that will cause you much trouble. To ignore it, and treat the building as a design only above the shop cornice, is weak, but it is the course usually followed, and to judge such designs you must see them when the shutters are up, when a solid base, sufficient to support the superstructure, is apparently formed. An answer to this objection is that when the shops are in use the streets are so crowded that this defect is hidden, but surely it is always possible to bring some strong line down, and the right-angled returns to the façades before advocated will here serve a very useful purpose.

In domestic or office designs it is nearly always possible to get a strong base, as, for example, the delightful corner at the Institute of Chartered Accountants, where the stone-work of the base is not only carried right round the curve, but its appearance of strength emphasised by means of horizontal rustications.

There is yet another way of treating the angle, and that is to so mask it that it is impossible to know that it is an acute angle. This is hardly a commendable thing to do, but there is an important example in the Bank of England at the corner of Princes-street and Lothbury. If it were not for the tanks above the attic story you would not guess that the angle was more than right angle, whereas it is really very sharp. No one can deny its cleverness, but it does not seem to be on right lines.

The City abounds in various angular treatments, and honest criticism must admit that many of them are very clever indeed ; there seems to be no lack of imagination in them, and oftentimes they must be judged by their design and not by their detail. The latter is often bad—very bad, and would disgrace our Elementary Class of Design—but there the design is, and as such it is to be criticised. The City is, indeed, a glorious school for study, and is a great example of the truth of the old tale of 'Eyes and no eyes.' To those who have learned the language the streets become, as it were, an open book wherein something good and useful can always be read ; but how many of us do so ? A rush from the train to the office in the morning, and another rush back in the evening, gives one but a blurred idea of what is to be seen. But go up to town one fine summer's morning—say between four and five, before even the workmen begin to get about—and you will be astounded at the wealth of design there is to be seen when all the streets are quiet, and you can stand to look at a building without attracting a crowd. Then you will find the charm of London, and at once come to the conclusion that many cities we rush to see on the Continent are not to be compared with ours — not even for picturesqueness. What glorious sketches many of the streets would make, and perhaps some day we may even get some in the Association Sketch-book.

It is time now to turn to the views. These are not by any means exhaustive of the subject, but have been taken as types, and in criticising them I would ask you to bear in mind the point tried to be clearly brought out— that credit should be given to the design, even if the detail is bad, and that good and clever detail must not excuse a poor design."

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Mr. Hennings then showed a number of lantern slides in illustration of the subject, offering some remarks in regard to each view. The following remarks refer to those slides of which we are able to give illustrations :—

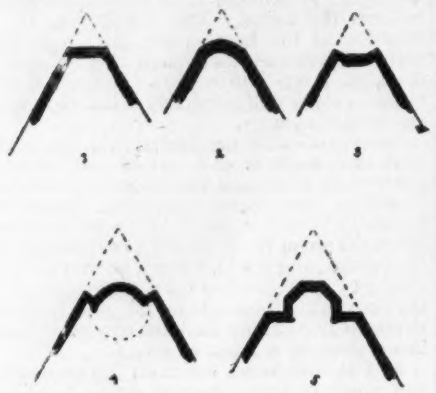

Fig. 1. Various Treatments of the Angle.

1. A diagram showing an angle and its various treatments, the developments of which are obvious.

3. The treatment of angles simply cut off,—Angle in Queen Victoria-street at east end of St. Mary, Aldermary.—It is an example of the triangle simply truncated, with the few strong architectural lines carried round to tie it in, the only attempt at a distinctive feature being the small elliptical window and depressed light below it. The effect is very satisfactory, without being strained.

4. An odd example from the corner of Jewin-crescent and Jewin-street. On the crescent side the architect has evidently had to consider ancient lights, and has thus got a very queer-shaped end. An attempt has been made to mask it on the second floor with a violent feature to give a central line. The effect is striking, but not pleasing.

6. One of the staircase houses, Holborn-viaduct. Owing to Farringdon-street crossing at an angle there are two acute angled houses and two obtuse, but the difficulty has not been solved, all four houses being treated alike. The attempt shown is, however, on right lines, as the two faces have right angle returns to deal with, mitreing of cornices and the intervening space filled with a curved wall, the only relief to the latter being panels, and possibly the curve would have looked better without these disturbing lines. The attic angle is crowned with a griffin, and is another example of the desire to mark the angle with a special feature. The roof difficulty is shirked.

12. The Westminster Palace Hotel. This is an example of a truncated angle, and very broadly treated. Each angle is marked by rustications, and the face between brought slightly forward. Above the ground floor it is relieved by an oriel, the lines of which are carried into the upper stories by means of the windows above. The attic is crowned by a dormer, having unfortunately little connexion with the balustrades at the side. Above is a very steep roof, capped by an iron railing. This is one of the few examples in which a feature is made of the roof. It is a suggestive example, but the detail is poor.

The Angle Cut off and Rounded.

This is the third stage in treatment, and is perhaps the most useful, and although very difficult of treatment and often sadly mismanaged, yet London has a few very good examples.

13. An early Victorian example on the north side of St. Paul's Churchyard, carried out in the flat cement treatment so loved at that time. The only two lines running round are the cornice over the shop fronts and the main cornice crowning the building. Between these two features, and on each façade, and as near as they can be got to the angles, are two pilasters, and the space between is simply rounded. There is a very small break in the cornice, and the vertical line of pilasters is marked by blocks in the parapet. There is not much in this design, but it is not offensive—a negative virtue, perhaps, but something to be thankful for.

15. A building at the angle of Queen Victoria and Knightrider streets. This may be called an example of simplicity or—shall it be said ?—poverty of thought, for the façade is simply wrapped round the curve, and there is not a single vertical line carried up as a break. You will notice that the balconies also run round, and the advertiser has not been slow to avail himself of such a chance—no nasty mitres of molds to prevent the unbroken flow of his decoration. There is, however, one point worth noticing—the pier is carried up the centre.

16. Spiers & Pond's angle in Queen Victoria-street, near the *Times* office.

Here we have a simple rounded feature, but the designer has marked the end of the straight façade by a flat pilaster and stopped his main cornice there, carrying its lines by means of a flat band. All other strings are carried round without change. Above the main cornice there is an attic story and large gutter crowned by a truncated cone. Note that the dormer gable at the side leads up to this, and well supports it. The detail is bad, but the whole effect is very pleasing, and the designer is to be credited for that.

21. A very sharp corner at the angle of Queen Victoria-street and the Poultry—an early example of our new A. R. A. It is a very striking example, and no doubt well known to most of you. The curve is a continuation of the façades, without any return, but the centre of the circular treatment above is well marked by a cluster of shafts, further marked at the main cornice by a bold gargoyle, and carried up into the top story by a flat buttress. All the windows are carried round the curve without change, the overhang of the first floor ones being a little distressing owing to the deep recessing of the tracery. The whole is crowned with a conical roof and flèche. As a design it may be said to wear well, for it does not distress by familiarity.

26. A particularly worthy example at the junction of Cannon-street and Budge-row. I do not know who designed this, but after having haunted all the City angles, this strikes me as the best-designed angle there is among them. The two façades have a boldly rusticated return at right angles to the face, and the continuation of these to the line bisecting the angle gives the centre of the circular treatment. All three stories have columnar treatment, the lowest Doric, the intermediate Ionic, and the top Corinthian. Between these the windows are placed, and are thus well confined, whilst the columns themselves give plenty of verticality, and contrast pleasingly with the strong friezes and cornices. The balustrade continues the parapet of the fronts, and the whole is crowned with a flat, lead-covered dome.

27. This is another view taken to show that the diminishing of the columns corrects the overhang of the lintels. Altogether I would commend this to you as worth careful study. Not only is the design harmonious, but all the mouldings are refined.

28. A work of the late John Gibson in Bishopsgate. It is very monumental in character, and must strike every one who sees it. The main façade is carried through without a break until the semi-circular end is reached, and there occurs a deep return—the frieze being flush with the curved face below. At two points in the semi-circle are coupled columns repeating the overhanging frieze and having the cornice mitred round. Each point is marked by a group of statuary, and the only questionable part of the design is the break of the curve.

29. A bank recently erected in Leeds. The plan shows the very awkward site the designer had to deal with, and it is undeniable that he has produced a very striking and dignified building. In this the frieze overhangs all the length of the curve, but is broken slightly over each column, spanning in a straight line from each. This seems to be the fault of the design—the breaks make it rather unrestful, whereas a clean sweep, such as Wren loved, would have been so much more effective.

Special Features.

[Mr. Hennings then showed some views which he called special features—examples out of the common; subjects which their designers had treated as peculiar and without any direct relation to the façades which they connect.]

30. The first one to be noted is one which must be unique—it is hardly possible that such another exists in any country. By the side of Cannon-street station, and dividing Dowgate Dock from Cousin-lane, stands this most extraordinary building. It is a very sharp angle, being only about 5 ft. wide at the end shown in the view, and although the façades are 100 ft. long, the base is not more than 20 ft. across. One wonders whether it was worth while to go to the expense of enclosing so small an area with so much brickwork.

31. Another view, showing the treatment of the end. The angle is truncated and a bay—considerably over the semi-circle on plan—stuck on to the end. It is tied to the structure only at the ground floor and main cornice, and finished with a stone roof.

32. Is the end of one of the Smithfield markets at the corner of Farringdon-street and Snow Hill. The building at the right hand is part of the same market, but the curved gap is a cartway down to a subterranean goods station. It seems a pity that the two parts were not joined and a large archway formed for the vans to go down; but perhaps corporations are not so greedy of floor space for rents as private individuals. The turret is many-sided on plan—about ten—and stands on a series of cast-iron legs—perhaps stanchions is the better name—running up two floors, and the brickwork above has a flat-panelled pilaster, placed at right angles to the bisection of each angle. The attic has more pilasters, in this case fluted, and all moulds mitred around them. The designer must have been very fidgety, for above all this he could not let the roof alone, but has made it in two slopes divided by a bold roll; and above further emphasised it by a series of storm lights. Altogether it is very unsatisfactory, and unworthy of the City.

35. An angle of the Institute of Chartered Accountants. It is a very attractive feature of a very attractive building—one full of corners cleverly managed. The bold, strong base is an unusual feature—nearly every example you have seen has a door or window here. Out of this some beautiful figures and ornament enclose a shield, and support a balcony much more than a semi-circle on plan; and by recessing the angle above between the columns space is gained for a small but complete dome crowned by a figure. It is a great pity this building is in a court, and not in a broad, open space.

36. This is a worthy neighbour of the last, at the corner of Moorgate-street and King's Arms-yard. It is a well-known example, full of beautiful detail—the sort of thing we should all sketch on the Excursion—and a most pleasing feature in a somewhat bald street. I hope you will not think me presumptuous if I venture to criticise it. The idea of the octagon standing over the canted angle and projecting slightly beyond the two façades is good, but its sudden beginning from a corbel is a little startling, and one feels that the pendants of the outer angles might have looked stronger if a curved corbel rose up to support them. This feeling of being detached is again apparent above, where, in three cases, the sill lines only bind it in, and the lintels of the windows seem somewhat wilfully placed below those of the windows adjoining. It is not until you get to the main cornice that there is a good tie, where by means of its overhang the face of the octagon is brought into line with the façades. Above is an octagonal slated roof, which seems to be exactly the thing wanted, but its finial, a small figure, seems rather doll-like; indeed, it wants a second look to see that it is a figure. The free introduction of sculpture confined between strong lines both vertically and horizontally is a very happy idea, and gives great interest. Yet, in spite of what I have ventured to call its faults, it is still one of the most beautiful things in the City, and I wish there were more of them.

37. A very special corner at the junction of Great Chapel-street and Victoria-street, Westminster. Both façades are covered by bays, and a turret is formed at the angle, having its faces brought flush with the bays and treated to a liberal allowance of strings, cornices, and balconies. At the base is a projecting porch, and the top of the turret swells out in appearance, having rounded pinnacles stuck on. The whole design is so piled up that it literally has become a chaos of bays and balconies, and is one of the most unquiet and fidgety things to be seen in London.

38. A design for utilising the site of a church in Birmingham. The plan shows the reason of the treatment, but it strikes one that the angle tower is rather imposing for a block of offices, and as a little too municipal in character. The site is a splendid one, and if the subject were not limited to angles would

provoke a discussion as to how far an architect ought to consider his surroundings.

39. A corner building in Harley-street, by a prominent member of the Association. There is here a lot of plain wall surface, contrasting pleasingly with the angle oriel, which although rich in appearance is very simple, and is immensely aided by the well-enclosed sculpture. A cornice ties it in at the top of the octagon, and here the treatment becomes curved, the angle being well-marked by the somewhat unexpected figure leading up to the main cornice. The roof is a mansard, and is relieved by dormers, but the angle one was surely worthy of a little more treatment. It looks almost as though by another hand, and its very prominence only serves to emphasise its baldness. Altogether it is a design worth a walk to see and study.

40. Treatment of an angle site at Bromley, Kent. Very sharp angle utilised for the purposes of a free library. The road on the left is the principal front, and the instruction of the Committee was to get the entrance at the angle. By slightly breaking the right hand angle a hexagon is formed and carried up as a tower, being porch on ground floor, lavatory on first, and clock-room above. The tower is also intended to call attention to the public character of the building.

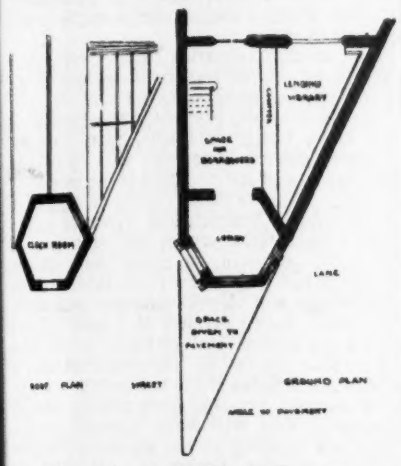

Fig. 40. An Angle Site at Bromley.

In conclusion, Mr. Hennings said he must express his thanks for the help given him in the preparation of the views, notably to Mr. G. Smith, Mr. F. Osborn Smith, and to the editor of the *Builder*.

Mr. H. D. Searles Wood said he desired to propose a very hearty vote of thanks to Mr. Hennings for his paper and for the interesting views he had shown. He thought that they should have similar evenings in every session—evenings for the discussion of contemporary work and honest criticism on it. He also wished to thank those gentlemen who had assisted Mr. Hennings with his photographs, for he knew of some of the difficulties in getting photographic views of London buildings. Mr. Hennings had very successfully analysed the various views and had emphasised various faults and beauties shown by them. It would have been interesting to have had the names of the architects of the buildings illustrated. He was afraid that architects were a great deal too modest in regard to their work. It would greatly add to the interest of the study of architecture if buildings were signed, and he was glad to say that one or two modern architects did that.

Mr. W. H. Seth-Smith, in seconding the vote of thanks, said he supposed that of all the disfiguring things which one saw in London, perhaps certain badly treated angles and turrets were the most offensive. They could not have had, therefore, a more useful paper to them as students of architecture, and now that they had had their attention particularly directed to angles, they were more likely to observe their treatment and possibly get hints for their own work. What they had heard that evening rather emphasised the view one often heard expressed, viz., the importance of *dignity* in London architecture, as distinguished from country work, where one did not so much look for work with monumental or classical feeling. He did not mean that architects should be so classical or rigid in their designs as to lose picturesqueness, nor that they should treat their angles in a very severe way. The views they had seen that night which they most commended could not by any means be called severe; some were distinctly picturesque, such, for instance, as those of the Institute of Accountants and the Insurance Company, in Moorgate-street. There were two angles which might have been referred to by the lecturer, one being the very acute angled corner of the Constitutional Club in Northumberland-avenue, which was very well-treated; and the other the angle, which was also very good, of the National Liberal Club. Mr. Waterhouse always seemed to set a good example of trying to treat the angles of his buildings well. In looking at the views he felt how difficult it was to treat angle windows and how frequently unsatisfactory was the attempt to get anything like a large amount of glass. A bay window carried up a corner with a lot of mullions always gave weakness to what ought to be the strongest part. So many of these angles faced main streets that they were always valuable features; and they were the best points from which to see processions and that sort of thing, and where there was a good deal of glass there was always this difficulty of fenestration. He thought more might be done in sharp angles by smaller features—carrying up buttresses and crowning them by small features. Of course, it was very difficult to do unless one made a kind of octagon and emphasised that by buttresses. He had seen some, which pleased him very much, with small delicately-finished finials against the sky.

Mr. S. Flint Clarkson said that Mr. Hennings started with acute angles, but he dealt with angles generally. He did not think that Mr. Hennings had sufficient regard for the acute angle in itself, for he appeared to treat it as though it were a nuisance. He (the speaker) did not think that acute angles should be looked upon in any other way than as one of the points in the planning of a city or a building, affording thereby an opportunity for the architect. As to Mr. Hennings's dislike to angled doorways, on the ground that they had a tendency to confuse the plan and give a certain amount of room to wasted passage, that had been very well put by an architect, who said that a doorway should lead in the most direct way from the principal thoroughfare to the heart of the building. With an acute angled corner they could select no part of the building which more completely failed to answer that end. Mr. Hennings had not spoken with much enthusiasm of the corner at Lothbury of Sir John Soane's Bank. It seemed to him (the speaker) that however often they saw it they could not fail to think highly of the feature. The architect had grappled with the difficulty in a very remarkable way, and had produced an effect which was beautiful in itself. He thought that the subject of the corner treatment of buildings was part of a still larger subject, viz., that each building, or each block of buildings, should have its own unity. The treatment of the flank was quite as important as the treatment of the angle in reference to the general effect of the city, and the general effect of a building. The shapeless flanks of buildings were an injury to the architecture of London and of all towns. No sooner did some buildings rise above those near them, than they disclosed an outline which was simply the result of accident, and which was distinguished by a decided want of amenity. Flanks might very well have been treated by Mr. Hennings, especially as he dealt with the National Provincial Bank of England, the corner of which building was really a flank. He wanted to throw out a practical suggestion as to corners, viz., that the public authorities should have a right to object to corners which were obviously absurd—to such a corner as was to be seen at Dowgate-hill, which must have been intended as a joke. He would suggest that if the angle was more acute than a certain angle (he would suggest 63½ deg.), then the public authorities should, under such powers as were given under Michael Angelo Taylor's Act, or an extension of it, prohibit the erection of such an angle—should be able to say, in fact, "You shall not erect that angle unless a certain curve can be turned between two enclosing sides of the angle." If something of this kind were done, it would conduce to the amenity of towns. No individual had any right to perpetrate a monstrosity. Of course we all knew when a thing was a monstrosity, but the difficulty was how an individual owner should be persuaded not to do such things. In the great thoroughfare soon to be constructed in London (the Holborn to Strand scheme), which ought to be one of the most remarkable works of the century, there would be a considerable number of acute angles, and he hoped that the controlling authority would see that each building to be erected should be a monumental building, in the sense that it should not have fronts and flanks, but be complete in itself, and designed with an idea of the points from which it would be seen. Some of the unfortunate results in recent street construction should be avoided in the present great scheme.

Mr. Bulmer Booth, in supporting the vote of thanks, said that in walking through the City one could not fail to be struck with the different manner in which angles had been treated.

Mr. G. B. Carvill said he quite endorsed what Mr. Hennings had said as to the hidden beauties of London noticeable in the early morning, when few people were about. With regard to the illustrations they had seen, he thought they all pointed to the fact that architects should avoid angled doorways; but then there was this difficulty—viz., that clients generally stipulated that an angled doorway must be provided, whatever the angle. Consequently, architects ought to endeavour to make these features, when provided, look well from all points of view. He thought the material was an important point in the matter. Certain doorways were put up in brickwork which ought to be in stone; to see bricks corbelling out with a great deal of weight on the top was a source of weakness.

Mr. M. Garbutt said that the title of the paper was "The Treatment of Sharp or Acute Angles in Buildings," and the net result of Mr. Henning's remarks appeared to be "Don't treat the angle at all, but cut it off." The first view was the only illustration of the actual treatment of a sharp angle; all the others had been more or less cut off. There was one sort of angle which Mr. Hennings had said nothing about which was the most difficult of all, perhaps, to treat, viz., the big angle that included several buildings and that was generally treated, with poor effect, as one large convex curve. The angle at the junction of Charing Cross-road and High-street, St. Giles', was an example.

Mr. C. H. Brodie said that the lecture reminded him of a paper by Mr. Baggallay a few years ago and it might very well be read in conjunction with Mr. Baggallay's paper. He did not agree with Mr. Clarkson's remarks as to the need of public authorities prohibiting the erection of buildings with certain objectionable angles; he thought the authorities ought not to be allowed to make such corners, for they could very often be avoided in the laying out of new streets and were, in fact, avoided in many places. Public authorities, however, sinned most egregiously in this matter—in Rosebery-avenue, for instance, were to be seen several knife-edged building sites, the knife edge being very frequently at the corner of a street.

The Chairman, in putting the vote of thanks, said he agreed with Mr. Searles Wood that it would be well if some papers read before them were a little less formal; the Association wanted to bring in all members and get them to express their opinions freely. Mr. Hennings came amongst them as an old friend, and he had treated his subject in a conversational way to the advantage of all of them. He thought it would be a good thing if in papers read before them there were a little less fear of criticising modern work—an architect could not be always successful in his work, and it would be a good thing to have the criticism of others. He agreed with Mr. Seth-Smith's remarks as to the value of picturesqueness. No doubt it was a very desirable thing to have picturesque buildings, but in a great city grandeur, nobility, and dignity were better and more suitable. Those qualities were shown in the buildings of Brussels, and in Belgium generally, where in some of the out-of-the-way churches some magnificent effects and grandeur were to be seen, though the detail was often poor and wanting. No subject seemed to be more suitable for discussion, as no feature of a building was so often a failure as an acute angle at the corner of a building. In Paris, architects were more successful in their angle treatment, and he would have been glad had Mr. Hennings brought some examples of the way angles were treated in Paris. As to the remarks made about cutting

off the angle, in his opinion that was the right thing to do; the mistake was to try and treat it acutely. A more satisfactory way was to treat it either circular or flat. One could not help feeling that the circular treatment was generally the most satisfactory. Very heartily did he concur with Mr. Henning's idea that the circular treatment should have distinct enclosing lines. The corner of the Bank of England was a splendid example of broad angle treatment. Our general treatment of angles should be on the idea that proportion was more valuable than detail; the problem was to obtain a broad and bold design as against a feather edge and small treatment. We are too apt to let small things and details injure the effect of our great masses in design.

The vote of thanks was then put to the meeting and very heartily agreed to.

Mr. Hennings, in reply, said he had found great difficulty in getting the names of the architects whose buildings he had referred to. He thought Mr. Clarkson was wrong in thinking that he looked upon corners as a nuisance. What he had said was that as a rule they had been badly treated, and that there were only a few good examples. As to the subject of façades, he had purposely excluded them, as the title of his paper showed. And he had excluded the subject of angle treatment to whole blocks of buildings, as he felt it was opening up another subject altogether. He knew of several knife-edge sites in London. He admitted what the President said about the dignity of buildings, and we should look at that more than the detail. We were all too apt to lose ourselves over little bits of detail, letting the greater things, which struck most people, go by. Often a commonplace building was more dignified than one on which an architect had spent days and days of thought.

The Chairman announced that the next meeting will be held on March 9, when Mr. C. E. Bateman will read a paper on "Small Houses."

The meeting then terminated.

CARPENTERS' HALL LECTURES:

OLD ENGLISH HALLS AND MANSIONS.*

GREAT houses form too conspicuous a class of buildings to be left out of a series of lectures on matters relating to building, and accordingly I am happy to be able with the help of photographs to give you some account of English halls and mansions.

I think it may help you in following what I have to say if in a very few words I give an outline of what course was run by the larger English dwelling-house as we are about to consider it. We shall find that the first stage was the castle. Originally built chiefly as the stronghold of Norman barons when they fortified themselves against all comers, castles by degrees became more commodious, and eventually were occupied as dignified and peaceful residences. A few continue to be so occupied to the present day. The grand example of this type is Windsor—the only really splendid palace at the disposal of the Queen of this rich country—and an illustrious type of the first division of my subject. I propose to close with some views of Windsor.

The next step was the *Hall*. This Hall was originally one large room, more like a noble sort of barn than a house, enjoying some sort of protection, either from a palisade, or a mound, or a wide ditch, and at first did not consist of much more than one roomy building where the owner of a Manor and many of his feudal retainers lived in a very rough way indeed. By degrees, as the feudal system was relaxed and manners changed, more convenience was attained; the dependent buildings were increased in number and in comfort, but the Hall proper remained still the core or centre of the mansion, and in some cases became a fine structure.

The best example of a hall of this type is Haddon Hall, in Derbyshire. The older buildings of Penshurst and the moated house at Hever would furnish other good instances within easy reach of London, and as is the case with the castle a few halls, more or less modernised, linger on as residences to the present day; though the majority of them, if not enlarged and modernised, have now dropped down to the position of farmhouses.

*A Lecture delivered at Carpenters' Hall by Professor Roger Smith, on February 22.

The hall was succeeded by the mansion, a dwelling-house proper, extensive and stately. This kind of house is the product of the time when war had ceased in our islands, and when something like internal safety had followed a long period of disturbance and strife. So it was during and after Elizabeth's time that mansions began to be built in many parts of the country. Many of the great houses which date from her reign are still in use, and in not a few cases they remain but little altered. The finest example of an Elizabethan mansion within easy reach of London is the Prime Minister's house at Hatfield; but there are many others with well-known and almost historic names.

To this class of house there succeeded in the seventeenth and eighteenth centuries, large, ambitious buildings of Classic architecture, such, for example, as Burley or Castle Howard, Blenheim or Chatsworth, and also a comparatively homely type of dwelling-house copied from Dutch originals, and in what is now usually termed the Queen Anne style of dwelling. In our own day there has grown up an excellent, comfortable, but picturesque type of country house of which it would be easy to select excellent examples, but we have not time for either the one or the other of these last-named types, and what I have to say to you will, as my title indicates, stop at the hall and the mansion; though I must for the sake of completeness make some reference to what preceded both, in the earliest times when great residences began to be built here.

The very earliest great houses were the villas or houses of the great Roman colonists who lived on estates which they had seized in various parts of the island and which they cultivated; they were built and occupied during the first four centuries, A.D. They really were great farmhouses, though unlike the buildings now used for farming purposes. They were called *villæ*, but a Roman villa was utterly unlike what we call a villa. Nothing is left standing which rises above the ground-line in the case of any Roman dwelling-house in England; but the lower part of walls, the pavements, and the pit or pits dug for heating apparatus remain in many cases, and enable us to understand the plan. The villas do not seem to have been lofty, but to have spread over a good extent of ground. In the large ones there were generally two great courts or quadrangles. In the front quadrangle stood the dwelling, which often occupied three sides of a square, though in not a few instances the remains show an L-shaped plan, as if a main block and one wing only had been built. There seems to have been in many cases a covered passage or verandah along the front of the building, and the windows and all the doors opened into it, and there were no internal corridors. At the back of this quadrangle was a second, with barns, stabling, and sheds. These places were not fortified, a fact which shows how strongly the Romans occupied this country. When the Romans left, the villa served for long as stores of building material, but probably few of the houses erected down to the Norman Conquest with these, or with any other materials were anything else than simple and of moderate dimensions; at any rate, none remain.

After the Norman Conquest a great deal of solid building was done, and many of the Norman nobility did what the Romans had done before them, and erected dwellings on their estates. But their hold on the country was less secure than that of the Romans, and possibly their distrust of one another was, not without reason, great; consequently what they built were strongholds, which the Roman villas were not. The usual Norman castle was a massive square tower, several stories high; the lowest story was as a rule given up to housing cattle, and the main part of the castle began at the level of the first floor, and was reached by an outside staircase. Several stories succeeded, with a stair in the thickness of the wall leading from one floor to the next, and each floor got light through small and narrow windows. On the top floor was the mouth of the well, which was carried up from the foundation in the thickness of the wall, so that if the tower were attacked and the enemy got possession of the lower floor the besieged taking refuge aloft would not be short of water. Such a tower is called a keep. A very large one (though much decayed) forms the castle at Rochester, but many exist of less bulk, though perhaps not less height.

The keep mostly stood on a mound and occupied the centre of an enclosed space encircled by a ditch and mound, and often by a timber palisade. Within this comparatively protected area, buildings of various sorts were erected to serve as cattle sheds and even stabling. All these were mostly of timber in the Norman time and have entirely disappeared, leaving the keep standing alone as Rochester Keep does. Thirty castles are recorded to have been built in the Conqueror's reign, and many more were built in the reign of Stephen. The architecture of the buildings and their arrangement gradually changed as the architecture of churches changed, one conspicuous improvement being the substitution of stone for timber in fences and attached buildings.

As time went on men built very extensive buildings under the protection of the keep, and, in many cases, much land was taken in and an inner and an outer enclosure, known as the inner and outer bailey, became customary. The Tower of London is an excellent example of a keep with a mass of adjuncts. The so-called White Tower is the great Norman keep and the various additional buildings are all surrounded by an immense artificial trench, now dry, but formerly full of water and forming a great protection to the fortress. This, which now goes by the undignified name of the Tower Ditch is an instance of what is commonly termed a *moat—i.e.*, a broad and deep artificial channel surrounding a castle or hall and full of water.

For several centuries men continued to enlarge old castles and build new ones till the introduction of gunpowder destroyed the value of castles as strong places, the latest built being said to be Longford Castle, 1591. In a few instances castles have been kept up as lordly residences, and are occupied at the present day as such. None of these equals or approaches Windsor, but Alnwick and Warwick may be named as castles which are still occupied by noble owners in state and comfort. We must not forget the remarkable fact that all this time and all over England great dwellings were being erected of a quite different type; not in the least fortified, yet far more secure than the castle; peaceful residences, in which the inmates lived not only in considerable comfort, but free from alarms, attack, or plunder. You will have guessed, perhaps, that I am alluding to the monastic buildings, abbeys, priories, nunneries; in short, the religious houses which had existed indeed before the Conquest, but were much more frequently built after it, and became more conspicuous and important during the three centuries which followed. Safe from pillage and violence all through those lawless and turbulent times under the protection of religion, the monasteries were systematically arranged for the public life of a considerable community dwelling together under a rule of life, but the head of each such community mostly had a dwelling of his or her own, and this dwelling, when the monastery was large, was itself extensive and almost luxurious. Such dwelling-houses as that of the Abbot of Westminster (now the Deanery) or that of the wealthy Abbot of Bury St. Edmunds must be looked upon as the first instances of what we call an English gentleman's house.

Having now touched briefly upon the Roman villa, the Norman keep, the castle, and the Abbot's house, we will turn to that form of considerable and semi-fortified English dwelling-house to which I have already referred—the hall.

A dwelling-house which was at least strong enough to keep away marauders, and which might, perhaps, even resist attack in the times of civil war, was wanted by most men who had anything to lose: and wherever such a house existed its shelter formed a protection for farm servants and other retainers, so that it required to be roomy. Space and some amount of strength against attack were therefore the features which we should expect to find. Such a house is sometimes called a grange and sometimes a manor house, but most often and most correctly a hall. In its simplest and earliest form the hall, as has been pointed out, was a single large and comparatively roomy apartment, with a fire-place in the middle of the door, and a hole in the roof to let out the smoke, and was both the living and sleeping place of the folk on the estate. The lord of the manor occupied one end of the hall, and at that part the floor was raised one step, forming what is called the dais, on which stood the table where he sat. So simple and rude an arrangement began to be felt insufficient in the century which suc-

ceeded the Norman conquest; and one step after another was taken towards providing various rooms for various purposes without giving up the use of the big hall. A passage which I borrow from a well-known authority (the dictionary of the "A. P. S.") describes extremely well what the hall had become by the middle of the fourteenth century:—

"In the one large room specially termed the hall, the owner and his household were to be found, when at home during the day, unless they were in the chapel or the bed-chamber. It served as audience chamber, as dining room, as dormitory (even so late as the middle of the fifteenth century), and sometimes as chapel. Its shape was usually that of a parallelogram, having at the upper end a raised pace or dais, occupied on one side by a buffet and on the other by an oriel window; the lower end was divided off for a width of from 6 ft. to 10 ft. for a passage called the screens, formed by a partition called a spur (or sometimes spear), in which were the entrances to the hall and the hatches, bars, or serving places for the baker, the brewer, the cook, and the vintner, while above was an open gallery for musicians." Adjoining the upper end, or dais, was the cellar, often on the same level as the hall, and so placed as to be under the master's control. Over the cellar was mostly a parlour, called a *solar*, often reached by an external staircase, and there were a few bedrooms. Variations constantly occur, but this description in the main will apply to most of the country houses built and lived in in England between the Norman Conquest and the accession of Henry VIII., say 1066 to 1509.

The hall and adjoining apartments, constituting the main house, stood sometimes on a plot of ground protected by mote, or ditch, or if not that at least by a fence. Sometimes the mote came close to the main walls, as at Ightham Mote, in Kent; sometimes the enclosure was lined (as the outer enclosing wall of a castle had been) with lower buildings, partly for living rooms, partly for stabling. The external walls were battlemented. The openings were small, except the main gateway, which was carefully protected and mostly had a portcullis, and if there was a mote there was a drawbridge. As the house grew more extensive and important—a growth which took place slowly—the plan of the heart of the house, namely, the hall and the rooms adjacent, remained much as it had been from the beginning, but the added rooms increased in number, size, and importance; and among them was very often a private chapel.

An excellent example of the mansion of the fourteenth century, with some later additions and enlargements, is Haddon Hall, in Derbyshire, situated on the river Wye, between Bakewell and Matlock, an extremely picturesque building belonging to the Dukes of Rutland, in good preservation, but not occupied now as a residence. Here the hall with its dais, and its passage with a minstrel's gallery over, remains, though its ornamental roof has disappeared, and a great range of kitchens, bakeries, sculleries, &c., stand at the lower end, and a beautiful solar, or parlour, at the upper end. This forms the central block of the house. On each side of this block is a quadrangle, of which the exterior buildings form three sides. They consist of ranges of rooms, and the chapel. Haddon Hall may perhaps, therefore, be described as one large parallelogram cut into two rather irregular quadrangles by the hall and its belongings.

Of course, from outside it is the surrounding buildings only that are seen, and as they are mostly two stories high with battlemented parapets they make a brave show. There are two towers, one a simple one belonging to the period when most of the structure was erected—namely, the fourteenth century; the other a more elaborate and very conspicuous entrance tower, with architectural features bespeaking a date near the end of the fifteenth century. A very fine ball-room was erected in the sixteenth century, probably taking the place of some structure of less importance. Both outside and in this is one of the most marked features of Haddon Hall, and it is the most modern in its air of stateliness. There is no mote, and no trace remains of any ancient enclosure except a fine old detached walled garden, now neglected and out of cultivation. A charming formal garden and a famous and picturesque terrace adjoin the exterior of the Elizabethan ball-room.

Haddon Hall, like the great majority of these buildings, is built of masonry, but there exists in Cheshire and Lancashire a whole series of buildings of this class, which are timber-built, and which it may be convenient to refer to here, though many of them were built later on, at the same time in fact as the more stately Elizabethan and Jacobean mansions, which are about to engage our attention.

These halls are locally called black-and-white work, and it is really not a bad name. Starting from a masonry base, they have each wall constructed of timber framing, made with timbers of large scantling placed not far apart and coloured black, and all the panels between the timbers are filled with plastering, which it is the custom to keep very white, so that the contrast between the black and the white is startlingly vivid.

Some of these halls are structures of considerable size, and include the traditional hall with its customary dais and high table, the passage crossing it at the lower end, and the solar or parlour; and in more than one instance the structure stands on land surrounded by a mote, only crossed by a drawbridge, so as to be fairly secure. Between the main timbers it is often customary to introduce bent pieces, so as to enrich the surface, and some of these buildings are highly, not to say excessively, ornamented in this way.

Mr. Henry Taylor, in his book, enumerates thirty examples of halls in Lancashire and Cheshire, almost all half-timbered and with quaint names. Some of the best are Agecroft Hall, in Pendlebury, Wardley Hall, Hall i' th' Wood, Denton Hall, Speke Hall, Moreton Old Hall, Bramhall Hall, and the very ancient Baguley Hall.

Returning for a moment to the actual hall—meaning the apartment, not the entire building—I may mention as an existing example the hall of the Deanery at Westminster, formerly the Abbot's lodging, and which retained the hearth in the middle of the floor to a recent period, and still retains the louvre out of which the smoke had to escape. This hall is, I believe, used as the dining hall of Westminster School. The hall took strong root in England, and in colleges and public positions a hall was usually erected. The finest of these was Westminster Hall; the most beautiful, Middle Temple Hall. Others within easy reach are the great hall at Lambeth Palace, now the library, the hall at Hampton Court Palace, and St. George's Hall, Windsor. There are others at Oxford and Cambridge, and of recent erections we have the sumptuous hall of Lincoln's Inn, and the vaulted one at the Law Courts.

Returning to the English dwelling-house, when at last some sense of security spread through the country, the mote and the drawbridge, the battlements and the small external windows gave way to more convenient but less strong buildings.

What is meant by times of unrest and trouble—and, one may add, what is meant by the times of quiet and security which followed—may be illustrated by a passage in "The Annals of an Old Manor House," an interesting book by Frederick Harrison, giving the history of the manor and manor-house of Sutton, near Guildford. "During four centuries," he writes, "the manor of Sutton is continually changing hands, passing from the Crown to the Crown favourites; back again to the Crown and thence into a new line. It is thus during four centuries tossed about like a racquet ball from chief to chief as were scores of estates in the South if they were worth the having. It passes successively to eight or ten families. More than ten times it was forfeited to the Crown. At least ten times the owner of it or the immediate heir to it is beheaded, attainted, or killed in civil war. It passes from King to baron, and from baron back to King, from Red Rose to White Rose, from York to Lancaster, and during the Wars of the Roses it is not easy to say at any given time to whom it belongs in law. It is held in turn, among other owners, by the Conqueror, by his favourite Robert Malet, by King Stephen, by his son William Earl of Warren, by Henry II., by King John, by the Lord Basset, by Roger Bigod, Earl of Norfolk, by Hugh Despenser, by Edward III., by Edmund of Woodstock, half-uncle of Edward III., by Roger Mortimer, Earl of March, by John, Earl of Kent, by Joan, Fair Maid of Kent, afterwards the wife of the Black Prince, and by Thomas, Earl of Kent, her son. Thence it passed by marriage to John, Earl of Somerset, the son of John of Gaunt. At last, by the death of various Beauforts, who fell in battle, or on the scaffold, in the Wars of the Roses, the inheritance ultimately passed, in 1468, to Margaret Richmond, the mother of Henry VII. She included it in her marriage settlement with Thomas, Earl of Derby, and at her death in 1509, she left the manor to Henry VIII., her grandson.

But feudalism practically ends with the battle of Bosworth. Henry VIII. and his grandmother quietly retain the property for thirty-six years. Then, in 1561, Henry grants the estates to Weston, a favoured comrade and friend, to build himself a stately mansion; and from that day to this the property has remained in the same family, and has descended peacefully from father to son, or from kinsman to kinsman." The family founded by Sir Richard Weston is a Roman Catholic one, and the historian can say of the Manor of Sutton that it is one of the few estates still remaining in England of which we can positively assert that it has never for a day passed away from Catholic hands, and wherein the Mass has been continually celebrated from the time of our Saxon kings.

"The revolution in habits and ideas implied in the building of a first-rate manor on purely pacific principles without any defensive character at all," observes Mr. Harrison, "is one of the most important in the history of manners. For five centuries, perhaps, no man of mark had ever built a residence in the country without providing for the case of its needing to be defended, at least against a mob. Sir Richard Weston, who was himself a soldier of experience, and could remember the battle of Bosworth, builds a house in which no trace of war appears, even by way of ornament. The forty years of Tudor sovereignty had done their work, the King's peace was so perfectly a habit that the Minister of Henry VIII. takes no more heed of defending his house than would a Minister of Victoria."

In the early years of the sixteenth century the self-willed Henry VIII. mounted the throne, and by him the religious houses, to which allusion was made earlier in the lecture, were all closed, their inmates turned out, and all their vast landed property was taken possession of by the King, and the bulk of it was granted by him to courtiers who had served and pleased him. A result of this was that many poor families became wealthy, and that many hitherto unknown men came to the top; and not only were broad acres distributed, but, in many instances, monastic buildings, both palatial and well built, standing on them, which were, at any rate, available as a stone quarry, yielding building material ready squared and wrought.

These accessions of wealth were confirmed and consolidated during the long and prosperous reign of Elizabeth, not forgetting that much money was brought into the country as the result of the plunder of the Spaniards which was extensively carried on by privateering and private venturers. The consequence of all this was that in the latter years of Henry VIII. and in the time of Elizabeth, and afterwards in that of James I., many great houses, and even mansions almost deserving to be called country palaces, were erected. The greater number were upon a scale of dignity and extent quite eclipsing the old halls and manor houses. Halls, however, still continued to be built by men of moderate means who required a residence.

The Elizabethan buildings, and the Jacobean ones which succeeded, possess much interest because they represent the English Renaissance. In other words, the English form of the transition from the architecture which we call Gothic to that which we call Classic. Let me illustrate what I mean by examples. Henry VII.'s Chapel at Westminster Abbey is one of the latest structures built in the Gothic style; and it and, indeed, the whole abbey are well-known examples of English Gothic. The Banqueting House in Whitehall and St. Paul's Cathedral may serve as examples of the matured Classic style, but between the dates of Henry VII.'s Chapel and of the earliest of the Classic structures there intervenes a period of more than 100 years, and in that century the Elizabethan mansion attracted to itself the best efforts of architecture at an epoch of considerable and increasing prosperity, and consequently a building epoch.

As has been explained, the hall had been usually surrounded by buildings which created for it a hollow square; and a certain number of the mansions which succeeded especially the stately ones, are planned so as to enclose a quadrangle, or possibly two quadrangles,

though they are not in other respects like the old plan; but the arrangement of a hollow square is a rather gloomy one for the English climate, and now that the need for anything like a shut-in dwelling-house had gone by, a new disposition of plan grew up, in which there were no internal courts, and all windows and openings looked out on the surrounding land, and got light and air therefrom.

This sort of Elizabethan mansion was mostly a long block of building with a projecting wing at each end, and in many cases a middle projection containing the porch; the result often being a ground plan in outline like a capital E.

This E plan was followed in many of the great houses of this reign, and it has been asserted that a tacit compliment to the Queen was implied in this adoption of the initial letter of her name as the outline of the house. Whether this was at the time really intended is not quite clear.

These mansions were full of windows, and these windows almost always have stone mullions and transoms. Never before, or since, have dwelling-houses seemed so greedy of the light of heaven as these. Big bay windows abound, and run up two stories or three stories, and look splendidly roomy and bright. The stories are not so lofty as we make them now, but there is plenty of space. The gables, when they occur, are often fantastic in shape; the chimneys are always conspicuous, and generally extremely rich in ornament, usually in cut or moulded brickwork; and the entrances are often marked by a picturesque and sometimes fantastic group of features.

The style of these Elizabethan buildings is, as has been pointed out, a transition. What was being gradually abandoned was the Gothic style as it had been employed in domestic buildings. What was being introduced was the revived Classic, which had made its appearance in Italy. In other words, the Renaissance was going on, and the fusion between the two manners, one on the wane the other on the increase, led to a very picturesque sort of building; and a great deal of variety is occasioned by the fact that in some buildings the general treatment is more Classic than Gothic, while in others it is more Gothic than Classic.

Rushton is an example where the quadrangle is very Classic, though the exterior has a good deal of Gothic feeling. Cobham shows both at one glance. In one or two particulars, however, these buildings are all of them Classic. The most striking one is the prevalence of symmetry in the general treatment. The idea seems early to have taken root, that whatever was done at the right hand should be repeated at the left. The entrance is at the centre, and in such examples as Montacute the most rigid application of the law of symmetrical arrangement prevails. It unquestionably adds a certain amount of dignity, but it introduces a good deal of stiffness, and if you compare Montacute with Haddon you will recognise that the increased dignity constantly entails a loss of the picturesque.

A rather more technical observation follows. In all Elizabethan work it is noticeable that the horizontal lines of the building are made more emphatic. In a Tudor or an Edwardian hall or manor house it sometimes happens that the windows are opened in outer walls, which in other respects are unmarked by features, and if there is anything added to mark externally the fact that the building is divided into stories inside, it consists in a narrow strip of moulding which an architect calls a string-course. In the Elizabethan houses the division into stories is more strongly marked—very often by a sort of cornice, or, if not that, by a strongly-marked series of mouldings; and at the summit of the wall there is almost invariably a well-marked cornice large enough to throw a strong line of shadow.

These stories and cornices and this symmetry are of course directly derived from the Italian buildings of the time, but it is not easy to guess what gave rise to not a few features, especially ornaments, which occur very generally, and which seem to have originated in this country and in Elizabeth's reign. Such, for example, are the broken gables and the ornamental chimneys which I shall have occasion to point out to you, and such are the strap ornaments and lozenges which are commonly introduced on pilasters at the doorways. Most of these specially Elizabethan ornaments are rather ungainly, and have a touch of the grotesque but they answer the purpose of enriching the part of the building where they occur.

I cannot forbear alluding to the very beautiful transitional style which at a period a trifle earlier in date made its appearance in France. This goes by the name of the King Francis I., who was a contemporary of our Henry VIII. It is more delicate and refined than our Elizabethan, but, like our style, it appears chiefly in country houses, of which many were built and were very graceful, but extremely different to the English manor house or mansion. One of the illustrations of the way in which architecture throws a light back upon the history of the times when the buildings were erected is afforded by the fact that Scotch dwelling-houses of this date resemble French ones to a considerable extent, a result of the intimate relations between Scotland and France at the time when Queen Elizabeth mounted the throne.

In the Elizabethan building, which, by-the-bye, was often erected in brick, the outgoing and the incoming styles will mostly be found blended something as follows:—The Classic semi-circular arch is almost always adopted, with its allied form, the elliptic arch. The window, on the other hand, retains its mullions and transoms almost invariably. The gable remains pretty steep, but it often has a curved and broken outline of its own, which is an English introduction, and in some cases it is suppressed entirely. The chimnies put on an importance and beauty that are also openly English.

The parapet often disappears, though in other instances it occurs everywhere, and the roofs are all flat. The parapet is sometimes, as for example at Hardwick, cut into fantastic shapes. A considerable flavour of the Classic regularity is imparted into the general disposition of plan, and into the position and design of the tower, if there is one. Columns and pilasters are frequently made use of, and cornices constantly, but they are rarely of regular Classic types, but are modified in various ways and ornamented with the quaint enrichments already alluded to.

Thus far my remarks are directed to the external appearance of the house. When we enter we find our old friend the English Hall so far modified as to lose its dais, but keeping most of the other customary features, and forming a splendid and luxurious vestibule or entrance-hall to the house. It frequently has an open roof; the walls are panelled, and where there is not an open roof, there is a panelled ceiling or one in free, hand-worked plaster. The finest feature of the interior is often the principal staircase, which is wide, of easy slope, and splendidly worked in oak, panelled and carved, with a heavy handrail, and stout newel posts and rich balusters. This sometimes rises out of the hall, sometimes adjoins it. Often there is a fine screen across the hall in the position on which the old spears stood, and over it comes frequently a gallery available, if the hall be on occasions used for a banquet, as a place for musicians or for spectators.

The living rooms and the bedrooms of these houses are numerous, stately, admirably lighted, and fairly provided with comforts. The necessities of the climate have made the fireplace an important feature in the living rooms. It is often a vast structure with a hearth on which logs of timber were burned on dogs, and frequently spacious enough for seats at each side of the hearth, forming the much-prized chimney-corner, and it is surmounted by a sumptuously-ornamented chimney-breast. If the great fire and chimney-corner are absent from the living room, they are rarely absent from the kitchen. There is not infrequently a large first-floor room—the saloon—which is enriched in various ways and made important. This, where it occurs, is commonly in addition to the hall, though sometimes it takes the place of that feature. At Wollaton, and to some extent at Westwood, this dwarfs and overpowers the rest of the mansion.

A peculiar and specially English feature occurs in the majority of the mansions of Elizabeth's time—the gallery. This is not by any means what we now usually mean when we talk of a gallery, except when we mean a picture-gallery. It is a long and often a narrow room of great extent, and commonly in the top story, frequently extending from end to end of the house, and usually, where there is a collection of pictures, it serves as the receptacle for them. From this circumstance our modern name for a place where pictures are displayed no doubt has come. The modern picture-gallery is the legitimate successor of the Elizabethan gallery, which must have made a sumptuous ball-room, and may have served as a place for the ladies of the family to get exercise and play games in cold weather.

The beauty of many of these interiors is often very great. Panelling, executed for the most part in oak, clothes the lower part of the walls. Above this in many cases tapestry is hung, and a rich cornice at the top of the wall carries the eye on to an enriched ceiling. The plaster work in these cornices and ceilings is excellent. The ornamental plaster work in some cases is done by hand, and when cast is usually cast in pieces and built up by hand on the ceiling, so that there is a profusion of ornament and a great deal of high relief. When suitable carpets and the quaint and beautiful furniture of the time are retained, it is not easy to over-estimate the air of quiet dignity and enriched comfort of one of these interiors.

These general observations have been partly illustrated by the photographs of mansions which have been before us as we went on. I now propose to complete our view of the subject of this lecture by a few photographs of Windsor Castle, to show how a great castle may serve as a lordly palace. I am indebted for the facts and dates very largely to Mr. Gotch's beautiful book on the Renaissance in England. In this book the majority of the buildings which we shall examine are illustrated, and as by the liberality of Sir Henry Harben a reference library, including this and other valuable books on art, is established at Carpenters' Hall, there is an opportunity, if any of you are really studying the subject, of consulting fine photographs of these buildings and drawings of their details at your leisure.

Notes on some of the Illustrations.

Montacute, in Somersetshire, was erected between the years 1580 and 1601. It is a very characteristic example of the Elizabethan house. The general block is almost of an E-shaped plan, though it might more accurately be described as H-shaped. The disposition is perfectly symmetrical, of three stories, with windows having mullions and transomes, great bay windows, gables of broken outline, prominent chimnies, well-marked divisions at the level of each floor. Internally there is near the entrance a great hall with singular decorations, and on the top story a gallery, 20 ft. 6 in. wide and 170 ft. long, extends from end to end of the building.

Montacute was built by Sir Edward Phelips, once Speaker of the House of Commons and Master of the Rolls in Queen Elizabeth's time. It remains to this day in the possession of the family of Phelips—and perhaps it is to this circumstance that it owes the preservation of the beautiful walled garden with its quaint pavilions which once was an adjunct of most of these houses, but was in too many instances swept away by the destructive landscape gardener, who was known as Capability Brown. This garden is full of fine old English flowers, and the spirit of English hospitality presides over the entrance to it, which bears the motto:—

"Through the wide re-opening gate
None comes too soon, none returns too late."

While the guest when he has reached and looks with interest at his entertainer's house is met with the laconic, but friendly inscription:—

"And yours, my friend."

Another great mansion, different from most in character, is Hardwick Hall, near Chesterfield in Derbyshire, belonging to the Cavendishes, the Dukes of Devonshire, and inherited by them from the builders of Hardwick, and is as much identified with them as is the better-known Chatsworth. Hardwick was built by the famous Elizabeth, Countess of Shrewsbury, who enjoys the sobriquet of Bess of Hardwick. She also built a house at Chatsworth. The date which Mr. Gotch gives for Hardwick is 1576. The building is gaunt and imposing rather than fine or attractive. There are no gables, but square-angle towers rise boldly against the sky, and their parapets, as well as those of the main block are pierced fantastically. The great house is full—painfully full—of windows, and there is a proverbial phrase which describes it as "Hardwick Hall, more glass than wall."

Cobham, in Kent, though built near the end of the sixteenth century, may be cited as an example of a great Elizabethan house, which retains a great deal of the Gothic character in its treatment, and in which the contrast of the two styles is remarkable. The Classic features were added later and the Gothic ones being visible side by side without much connexion. The date of Cobham is 1584 to 1601. It was built by one Sir William Brooke, who was created Lord Cobham, and who was afterwards attainted and lost the property. It was granted to the ancestors of the present owner, Lord Darnley. The house, which consists of a large servants' court with two wings, has been much altered. The general material is brick.

Rushton, Northants, seat of the Treshams, was a considerable house in the fifteenth century. Sir Thos. Tresham enlarged it in 1595, but his heir was involved in the Gunpowder Plot and died in prison, and the estate was sold to the Cockeynes, who became Viscounts Cullen. Between 1626 and 1630 much additional building was done.

The house is three sides of a square, connected by a screen, an arrangement which emphatically brings out the love of symmetry in the builders of these great houses.

Bramshill, in Hampshire, is identical in date with Hatfield. It was built between 1603 and 1612. It is a less ambitious building than the last two, being of less extent, and constructed mainly of brick. In plan it is an oblong compact block with a pavilion added on at each of the four corners. There are enriched parapets but no gables. The best feature is the very striking entrance, with an elaborate bay window over it.

Bramshill was built by Lord Zouch, of Harringworth. From his family it passed into that of the Copes, who still hold it. It has been but little altered.

Audley End.—Mr. Gotch reproduces a quaint description of the hall from Evelyn and some references to it in "Pepys' Diary." It was begun 1603, finished 1616, built by Thomas, first Earl of Suffolk, Lord Treasurer, and passed through several owners to the family of Lord Braybrook.

A great portion—the outer court and part of the other—was pulled down in the eighteenth century. The big house that remains is but a portion of the whole, but is a fine residence.

Burghley, in Northamptonshire, near Stamford, is a lordly house built for himself by Elizabeth's astute and trusty chancellor, Cecil. William Cecil is the greatest name in the roll of able men who served Elizabeth in England, and this was among the finest palatial houses erected by them. It differs from Montacute in many respects, though built at the same time. The dates range between 1577 and 1587, though it is clear, says Mr. Gotch, that some building was in hand here for Cecil twenty years earlier. Unlike Montacute, Burleigh is built round a quadrangle, nor has it the gables which mark Montacute, but its raised sky-line is obtained by the use of high-pitched roofs. It has pinnacles, many chimneys, and an open parapet, and more use is made of columns, arches, and other such Classic features, especially at the entrance and in the interior of the quadrangle.

Hatfield.—The family of Elizabeth's great chancellor, however, is identified with another palatial mansion, Hatfield, the lordly home of the present Prime Minister, Lord Salisbury. Lord Burleigh's son, Robert, Earl of Salisbury, was the owner of Theobald's House, long since destroyed, and he exchanged it with James I., who desired to possess it, for Hatfield, then in the royal possession; and in 1607 he began to rebuild a modest house that was then standing, and of which portions remain incorporated with the stables. This house he replaced by the noble pile which, not much altered outside, though a good deal changed inside, remains to this day the seat of the Cecils. Unlike Burleigh, Hatfield is an example of the E. plan, but the wings project southwards so far from the main block that the space enclosed forms really a quadrangle with one side open like Rushton. In this building all the disposition is symmetrical. The visitor, on entering, has the rooms devoted to service in the wing on his right. To the left, enjoying the easterly aspect and the south, are the private rooms, reached by passing through the hall and the state staircase. The great hall, with a rich wooden screen and a gallery over it, is one of the finest examples of a Jacobean interior that we have.

Wollaton, 1580-1588—believed to have been designed by Thorpe—stands near Nottingham. Square block, four towers at four corners, lofty hall in centre, equal to three stories or 52 ft. high, and with a story over. It was built for Sir Francis Willoughby; it cost 80,000*l.* The Classic more prominent than Gothic in this building. Gables on towers very Elizabethan. Wollaton is now Lord Middleton's seat. The interior of the great hall, with the carved brackets and pendants supporting the great ceiling, is very fine.

CHURCH CRAFTS LEAGUE.

THE inaugural meeting of the Church Crafts League was held at Leighton House on February 20. The Bishop of Rochester was elected President, and Dr. F. D. Drewitt Hon. Treasurer. The following artists were elected to serve on the committee: Sir W. B. Richmond, R.A., Mr. Henry Holiday, Mr. W. Goscombe John, A.R.A., Mr. Conrad Dressler, Mr. A. G. Walker, Miss Emily Ford, Miss Lowndes, Mr. T. Stirling Lee, Mr. Alexander Fisher, Mr. Byam Shaw, Mr. C. O. Skilbeck, Mr. J. Phillips. Also the following clergy and others: Canon Rhodes Bristow, Canon Henry Scott Holland, Canon Gore, Canon Armitage Robinson, Rev. Charles Biggs, Rev. Percy Dearmer, Hon. Mabel de Grey, Mrs. Russell Barrington, Mr. Dyer Edwards. The rules and objects drafted by the provisional committee were then discussed and adopted, the objects being: 1. To bring the clergy and others responsible for the construction and decoration of churches into direct relation with artists and craftsmen engaged upon work of the kind. 2. By this means to restore individual character to art in churches; and to remedy the evil results of commercialism in the matter.

The members of the League will be either "ordinary" or "artist" members, and the latter class will be elected by a two-thirds majority of artist members present at a meeting after due notice given. The committee is to consist of twenty-four members, besides the president and treasurer, of whom twelve are to be artists, and not less than six clergy.

It was announced that the following had consented to be patrons of the League:—Mr. G. F. Watts, R.A., the Archbishop of York, and the Bishops of Bristol and Stepney. The temporary address is, the Secretary, Church Crafts League, Leighton House, 2, Holland Park-road, Kensington, W.

THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

COUNTY COUNCIL DWELLINGS, AND NATIONAL BRITISH GALLERY, MILLBANK.

As on the occasion of the first visit of the session, two visits were made last Saturday, viz., to the County Council dwellings now being erected at Millbank, and to the completed wing of the National British Gallery on the adjoining site. The subject of "Working Class Dwellings" was dealt with from many points of view in Mr. Blashill's paper read before the Association on the 9th ult.,* and it was therefore with more than usual interest that the members availed themselves of the opportunity of visiting this recent development of one of the most extensive schemes undertaken by the Council.

The plans and working drawings were on view, and were explained by Mr. Riley, the Superintending Architect of the London County Council, assisted by Mr. R. Minton Taylor, who has been particularly associated with the undertaking. A large scale plan showing the historical vicissitudes of the site was interesting, and from it we were able to trace the approximate direction of the original Watling-street, which took the river at a ford at Millbank prior to the Christian era, the position of military entrenchments made by Cromwell, the course of the small stream from which Tyburn was named, and many other archæological items of an interesting character.

The planning and grouping of the blocks of buildings, together with the new roads involved, is in itself a special study, both with regard to the aspect and the accessibility of each group. The apparent success of the scheme is in a measure due to this freedom of spacing, only to be obtained when a large vacant site is available such as is offered in the present instance.

With the exception of the central group, which is completed and tenanted, the buildings are in various stages of construction.

The south-east block proved interesting from many points; the planning and general arrangements seemed adequate, and the detail simple. But for a few feet of dark brickwork at the base, the elevations are carried out in red bricks. The two main building lines meeting at an irregular angle have given an opportunity for a central feature, which is carried up as a turret at the intersection of the roofs, which are covered with red tiles of a pleasing colour.

The staircase walls are built with Fletton bricks which are left fair faced. Partitions have received considerable attention, and instances of these in coke breeze and specially made slabs of various kinds could be noted adopted in the same relative positions with the object of testing the cost of production; and we understand that the slabs have proved the most economical, being cheaper than the breeze, at the same time occupying less space, as plastering is not necessary.

The completed block is a distinct success and is picturesquely treated; the green Westmorland slates, graduated in size, with which the roofs are covered, look charming, and eventually will be in pleasant contrast to the red tiling of the other buildings.

The President of the Association, Mr. Fellowes Prynne, conveyed the thanks of the Association to Mr. Riley and the Housing Committee of the County Council for allowing the visit to take place, and referred to the kindness and hospitality of Messrs. Holloway Bros., the contractors, who attended personally to give any explanations. Mr. Reed, the manager of the works, was also of considerable service in conducting the members over the various buildings.

The addition to the National British Gallery, recently completed, was also visited. The design of the building generally has been fully dealt with in our columns in previous issues. It is a matter of comment that the extensive basements are not utilised to greater advantage. Light is obtainable from all four sides, and, from casual observations, increased height to the main floor would seemingly have given the building an advantage with respect to the elevations, and a greater part of the lower floor would have become a more useful and essential department of the gallery.

* See our issue of February 17 for Mr. Blashill's paper.

THE BUILDING TRADES' GIFT TO THE NATION:

HOMES FOR DISCHARGED SOLDIERS.

WE have pleasure in announcing the following further list of additional contributions and subscriptions:—

Additional Contributions for Individual Sections of the Work.

Messrs. Joseph Cliff & Son, Wortley, Leeds.—The complete sanitary ware for two homes.
Messrs. Sharpe, Jones, & Co., Parkstone, Dorset (second gift).—Sixteen complete rock concrete manholes.
Messrs. Matthew T. Shaw & Co., Limited.—Light iron joists for concrete floors.
Messrs. John Grover & Son.—Forty doors.
Mr. J. M. Boekbinder.—Plastic decoration for recreation hall.
Messrs. Engert & Rolfe.—100 squares bituminous felting for the recreation hall.
Messrs. Francis & Co.—10 tons Portland cement.
The Cameo Wood-Working Company, Loughborough, Leicester.—1,000 ft. of mouldings.
Messrs. Noyes & Co.—2,500 wall ties.
The Coalbrookdale Company.—One iron staircase.
Messrs. Kemp, Collier & Co.—Scaffolding poles and putlogs for two homes.
Messrs. Hawkins & Son.—One truck-load grey stone lime.
Messrs. Thomas Turner & Son (Lightcliffe, near Halifax).—Steps for one of the homes.
Messrs. Shanks & Co. (Barrhead, near Glasgow), per Mayor of Windsor; second gift.—One bath.
Messrs. Peace & Norquoy (Manchester).—One patent folding partition.
Mr. S. W. Norman.—Six outside green blinds.
The London Drawing and Tracing Office.—Sun prints and photo copies of the working drawings.

For the Electric Light Installation (per Mr. Max Byng).

The International Electric Company, Limited.—Electric light fittings.

Messrs. Johnson & Phillips' Electric Cable Works Limited. Three coils of 600 megohms vulcanised and braided cable.

The Worthington Pumping Engine Company.—Feed water-pumps required.

Additional Gifts for the Equipment of the Homes.

Messrs. S. J. Waring & Son.—The entire furniture for one home.

Messrs. Williams & Co. (Hackney).—One washing machine for laundry.

Additional Subscriptions.

The Proprietors of the *Builders' Journal*	£50	0	0
The Provident Institution of Builders' Foremen, and Clerks of Works. Collected at their Annual Dinner	17	10	0
Mr. J. Andrews (per Mr. Thomas Gregory)	10	10	0
Messrs. Battley, Sons & Holness	10	10	0
Hooper's Telegraph and I. R. Works, Limited (per Mr. Max Byng)	10	10	0
Mr. Thos. W. Jones, Beckenham	5	5	0
Workmen of Messrs. Humphreys, Ltd.	2	1	0
Workmen of Mr. Wm. Brass (per Mr. Ebnell)	1	3	3
H. R. and H. J. R., Teneriffe	1	1	0
Workmen of Mr. A. Jamieson, Hanwell	0	14	0

THE SURVEYORS' INSTITUTION:

BACTERIAL TREATMENT OF SEWAGE.

A MEETING of the Surveyors' Institution was held on Monday at No. 12, Great George-street, Westminster, Mr. T. M. Rickman, President, in the chair.

The minutes of last meeting having been read and confirmed, and some donations to the library having been announced, Mr. Edward Stafford Howard, Commissioner of Woods, Forests, and Land Revenues, was elected an honorary member.

The discussion was then resumed on Mr. H. T. Scoble's paper on "The Bacterial Treatment of Sewage," read at the last meeting, an abstract of which appeared in our issue for the 17th ult. The Secretary, Mr. Julian C. Rogers, first read some communications on the subject—from Professor H. Robinson (who stated that the data now available were sufficient to dispose of the objections to bacteriological treatment of sewages) and from Dr. Rideal, who took exception to the use by Mr. Scoble of the term "burnt out ash."

Mr. Howard Martin said the subject was one of the two or three most important subjects which could be discussed in connexion with municipal management. His experience of sewage purification had been with the irrigation system, which he naturally thought was the best; but it was only the best under very favourable conditions, which were extremely expensive conditions, involving the acquisition of large areas of land, which could not always be obtained. As to the bacteriological system, it ought to be discussed on its merits. What they wanted to know was whether that system had been proved by experiment to be practically successful. So far as he knew, the most recent experiments on the bacteriological system had been at Croydon, at a supplementary sewage farm, which, unfortunately, had a very heavy clay soil, and on which there had been considerable difficulty in satisfactorily dealing with sewage by irrigation. But the system had been tried only in a rough and makeshift manner, which could not be regarded as conclusive. But even at Croydon the system had given such satisfactory results as to lead to the hope that the extension of the experiment on proper lines would overcome all the difficulties in the management of that farm. The report by Messrs. Baldwin Latham, Percy F. Frankland, and W. H. Perkins, jun., as to the sewage of Manchester, dealt with the matter in a most exhaustive manner, and the conclusion of those gentlemen was that the bacteriological system was well suited for Manchester. There were many towns where it would be a great advantage to deal with sewage on such a system.

Mr. Grantham said that he had erected recently tanks for the bacteriological treatment of sewage in the case of two towns. The tanks for the first town were finished rather more than twelve months ago, and they only dealt with small quantities—about 25,000 gallons per day—of domestic sewage. There were two sets of tanks on the Dibden or Sutton system, and there was no land used except that which was required for the tanks. Not long ago, the effluent was analysed, and it was described as excellent, and in that case the system seemed to be working extremely well. The tanks did not have more than one filling a day, and they seemed to be quite capable of dealing with the sewage. The storm water was entirely cut off from the sewers, and there was no tank, therefore, for grit. In the second case there were 170,000 to 180,000 gallons to deal with per day. The plans were really prepared for the treatment of the sewage by chemical methods, but it was decided finally, so impressed were the authorities by the Sutton treatment, to utilise the tanks which were intended for precipitation for the bacteriological treatment of the sewage. There were a double set of tanks, and the sewage to be dealt with contained 33 per cent. or more of brewery refuse, which had been a trouble to the authorities for many years. For six months the system had been working, the effluent was perfectly clear, and the system was giving great satisfaction.

The discussion was continued by Mr. Moore (the City Analyst of Exeter) who said, in the course of his remarks, that in reference to the requirements of the Local Government Board as to land, he echoed the wish that that body would not continue to insist on its acquisition. The time would come when it would be see that bacteriological installations are able carry on the work as well as systems need g land), Mr. Candy, Mr. Scott Moncrieff, Mr. A. Martin, and Mr. Strachan.

Mr. Scoble, in reply, said that where an abnormal amount of acid was present in sewage some counteracting substance could be introduced to purify it, and that would have to be done no matter what system was employed. Covering in tanks was not essential, but it was preferable to use them, for when covered in there was no interference by rain or cold to any large extent, nor could objectionable gases escape and become a nuisance.

It was announced that the next meeting will be held on March 12, when Mr. J. S. Will, Q.C., will read a paper on "Underground Water."

The meeting then terminated.

Illustrations.

PART OF QUADRANGLE, ST. JOHN'S COLLEGE, OXFORD.

THIS drawing is one of the set of beautiful drawings that gained Mr. J. B. Fulton, their author, the measured drawings medal of the R.I.B.A. Mr. Fulton sends the following description:—

This quadrangle was completed through the munificence of Archbishop Laud (1631-1635), who built the remaining two sides and completed the president's lodgings which lie between the two quadrangles; to him also are due the two beautiful colonnades and the charming garden front; neither of these elevations are surpassed in charm by any other building in Oxford. They are most interesting, for in them their architect, Inigo Jones, has blended with the traditional Gothic of Oxford, the chancel style which had interested him during his recent travels and studies in Italy.

The statues in the quadrangle are those of Charles I. and his Queen, Henrietta Maria; they are the work of Le Sucy.

GATEHOUSE, GEMERT CASTLE, BRABANT.

THESE two drawings represent another of the castle restorations of Dr. Cuypers of Berlin, whose extensive work of this kind at the castle of Haarzuylens was illustrated not very long since in our issue for October 21, 1899.

The drawings show the gatehouse of the castle of Gemert, in the Duchy of Brabant, the one showing the view from without, on approaching the castle, the other the view from within the courtyard after crossing the drawbridge and passing through the entrance gateway.

The original castle was built at the beginning of the sixteenth century; of this, however only the vaults remain; the upper portion was entirely rebuilt at a later period. The materials are brick and white sandstone.

The illustrations are from drawings made on the spot by Herr Jacques von Straaten.

HOUSE AT BICKLEY, KENT.

THE plan explains the house, which is built of local bricks covered with cement rough cast, with a red brick base, and roofed with Broseley tiles; the exterior woodwork is painted black. Mr. W. Curtis Green is the architect, and Messrs. Podger & Son, of Bromley, the builders.

BRISTOL TRAMWAYS: DEPOT AT BRISSLINGON.

THIS drawing illustrates a small part of an extensive building scheme of the Bristol Tramways and Carriage Company. I was employed by Mr. J. Clifton Robinson, the engineer to the company, to prepare designs and working drawings for this and the central power station. They are now being carried out by the company's own workmen. The building was designed to have cement rough-cast walls with Bath stone dressings.

W. CURTIS GREEN.

TREATMENT OF ANGLES IN STREET BUILDINGS.

THESE illustrations are from some of the lantern-slides shown by Mr. A. W. Hennings in the course of his lecture at the Architectural Association last Friday on "The Exterior Treatment of Sharp or Acute Angles in Street Buildings." Mr. Hennings' remarks on the treatment of the angles in the buildings illustrated are given on page 208. The following are the titles of the illustrations, the numbers referring to the figures on the plate:—3, Angle in Queen Victoria-street, at east end of St. Mary Aldermary; 4, Angle of Jewin-crescent and Jewin-street; 6, Holborn-viaduct N.W. Staircase House (Sir Horace Jones); 12, Westminster Palace Hotel; 13, North Side St. Paul's-churchyard; 15, Angle of Knightrider and Queen Victoria streets; 16, Queen Victoria-street, opposite *Times* Office; 21, Angle of Queen Victoria-street and Poultry (by Mr. John Belcher); 26, 27, Angle of Budge-row and Cannon-street; 28, Bank in Bishopsgate (by John Gibson); 29, Bank in Leeds; 30, 31, Warehouse at Angle of Dowgate-dock and Cousin-lane (Mr. J. Douglass Mathews; 32, Smithfield Market, Angle in Snow-hill; 35, Institute of Chartered Accountants (Mr. J. Belcher); 36, Premises, Moorgate-street (Mr. Aston Webb); 37, Victoria-street, Westminster; 38, Design by Mr. Henman for Site in Birmingham; 39, Harley-street (by Mr. Beresford Pite).

THE PROVIDENT INSTITUTION OF BUILDERS' FOREMEN AND CLERKS OF WORKS:

ANNUAL DINNER.

THE annual dinner of the donors, subscribers, members, and friends of this Institution was held in the King's Hall at the Holborn Restaurant on the 24th ult. Mr. Charles Wall, vice-President of the London Master Builders' Association, occupied the chair, supported by Messrs. T. M. Rickman, President of the Surveyors' Institution; Thomas Gregory, President of the London Master Builders' Association; W. J. Locke, Secretary, Royal Institute of British Architects; T. Costigan, Secretary, London Master Builders' Association; F. L. Dove, — Maton, and others. The company numbered over 400 members and friends of the Institution.

The loyal and patriotic toasts having been honoured (the Chairman proposing them, and Mr. T. Costigan ably replying for "the Navy, Army, Reserve, and Colonial Forces"), a collection was made on behalf of the funds of the Building Trades' Gift to the Nation, resulting in the collection of 17*l.* 10*s.*

The Chairman then gave the toast of the evening—"Success to the Provident Institution of Builders' Foremen and Clerks of Works." Builders' foremen and clerks of works were, he said, as indispensable to builders as soldiers were to the country, and he had no hesitation in appealing to all those who were able, to contribute to the funds of such a deserving institution. In the building trade the unexpected often happened, and a foreman or clerk of works might meet with an accident at any time, and it was then that the usefulness of such an institution was realised. Builders' foremen and clerks of works should join the Institution and in that way help it (and themselves, if they ever required assistance).

ST·JOHN'S·COLLEGE·OXFORD·

SKETCH·OF·COLONNADE·
IN·INNER·QUADRANGLE

INK PHOTO SERVICE LTD 4 & 5 EASTHARDING STREET FETTER LANE E.C.

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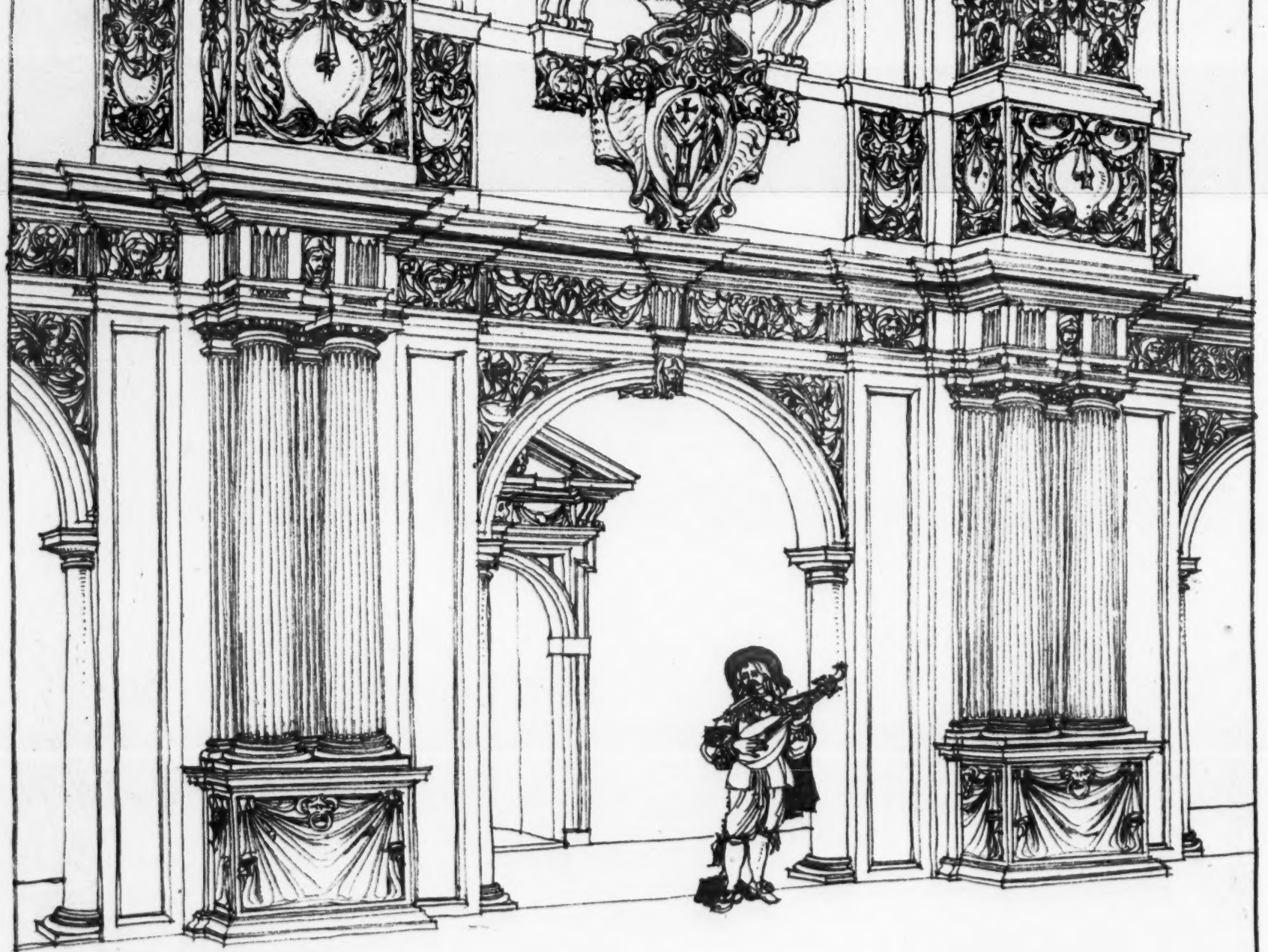

ST·JOHN'S·COLLEGE·OXFORD·

SKETCH·OF·COLONNADE·
IN·INNER·QUADRANGLE

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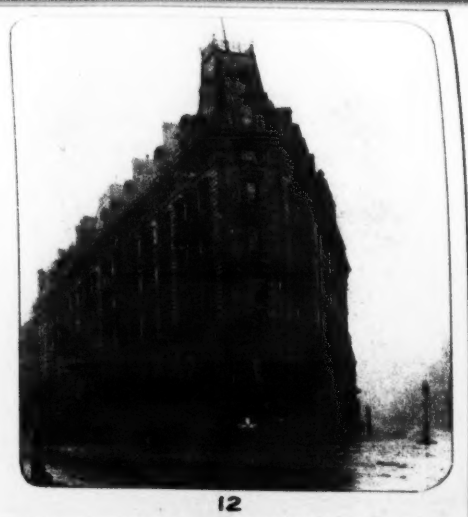

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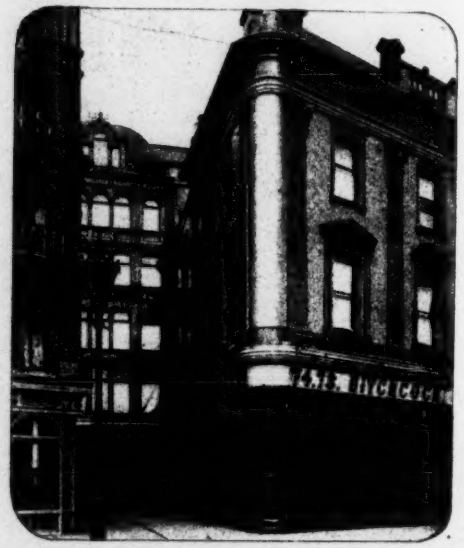

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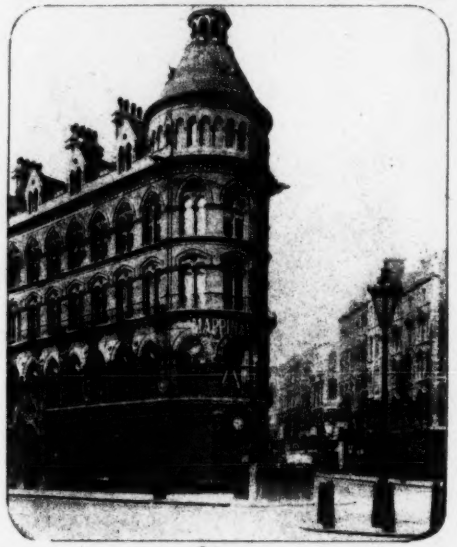

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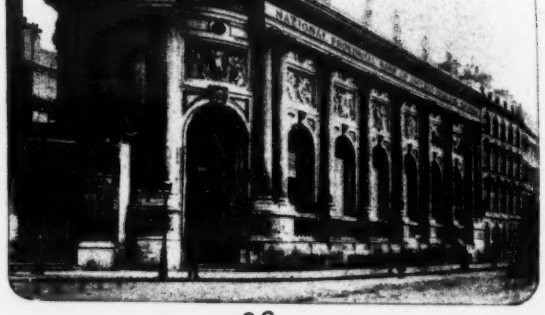

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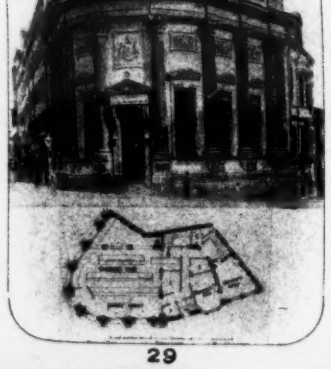

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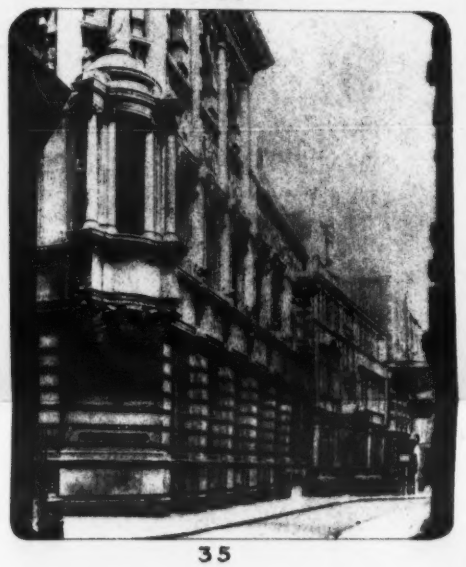

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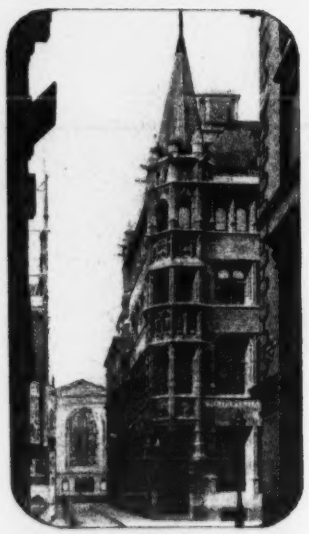

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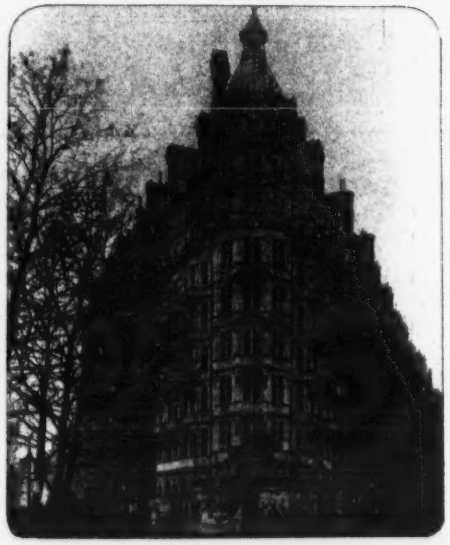

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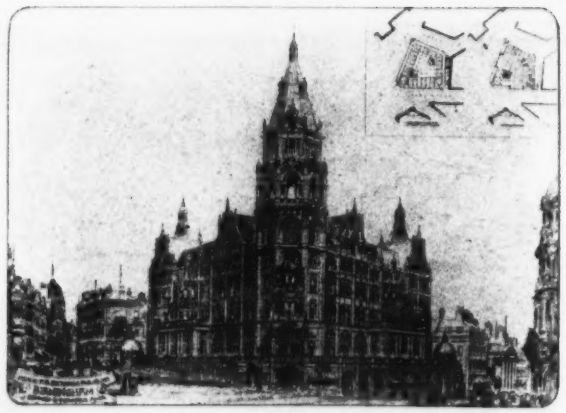

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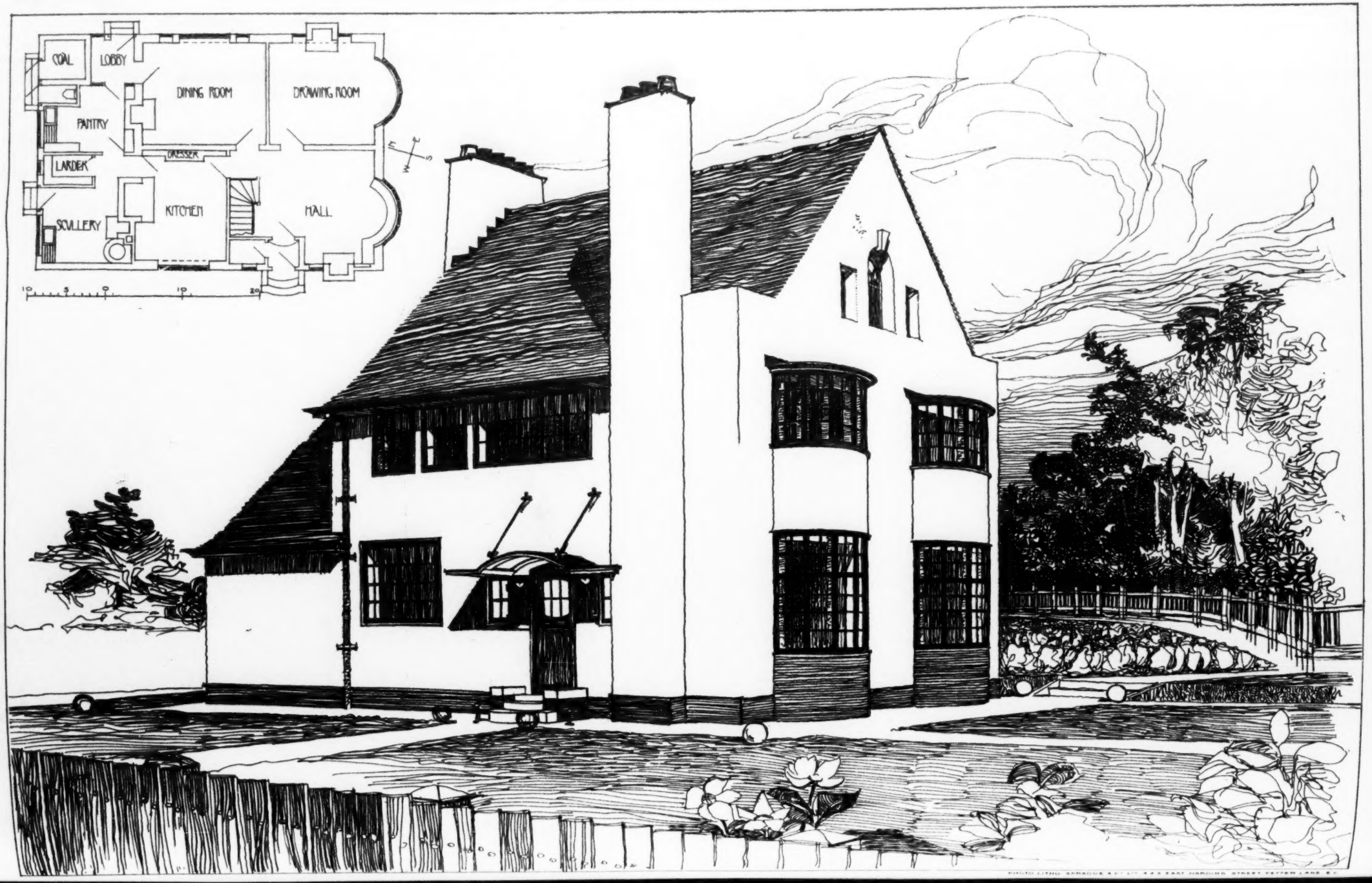
TREATMENT OF ANGLES IN STREET BUILDINGS.

(Illustrations to Mr. Hennings's Paper at the Architectural Association.)



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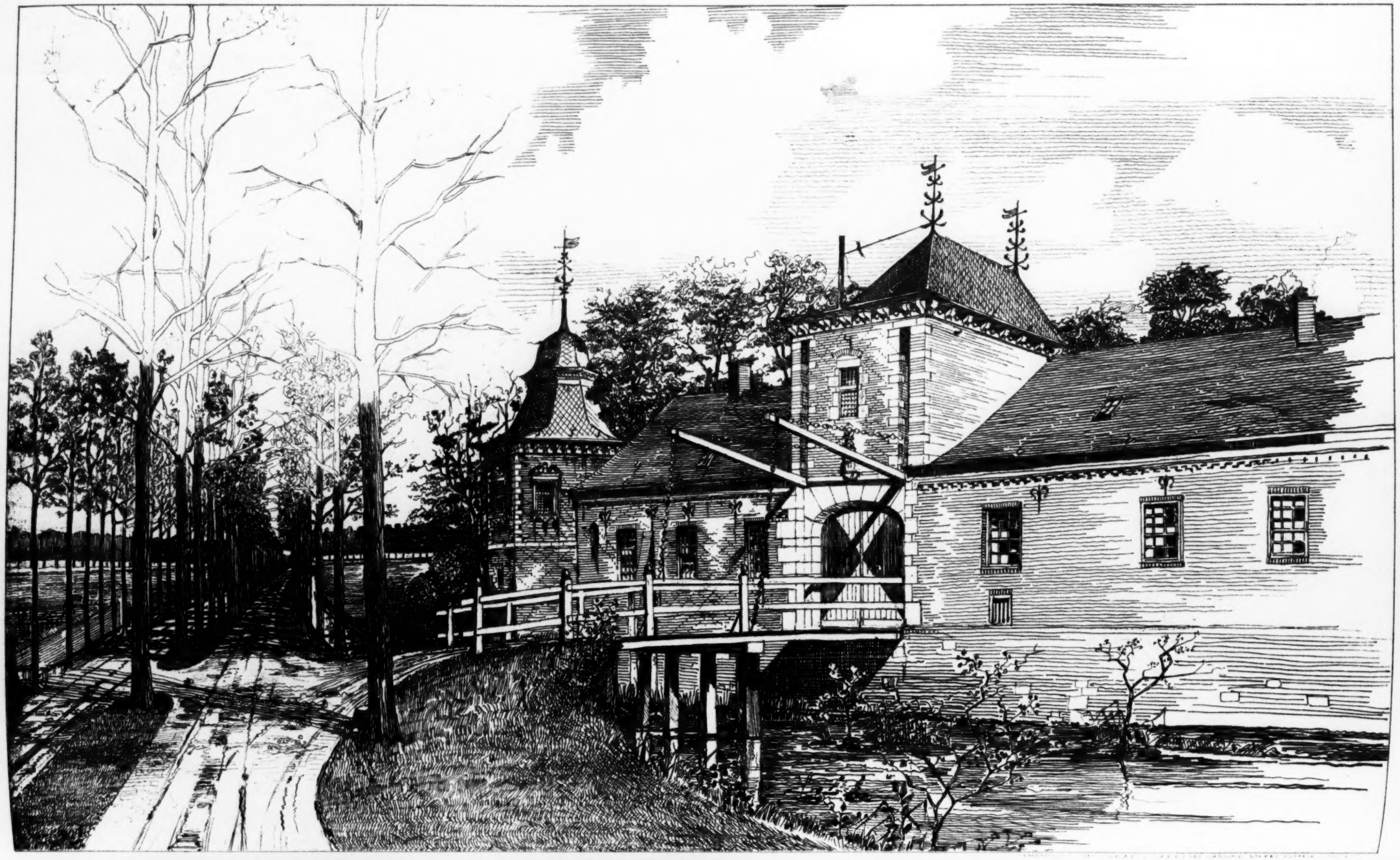

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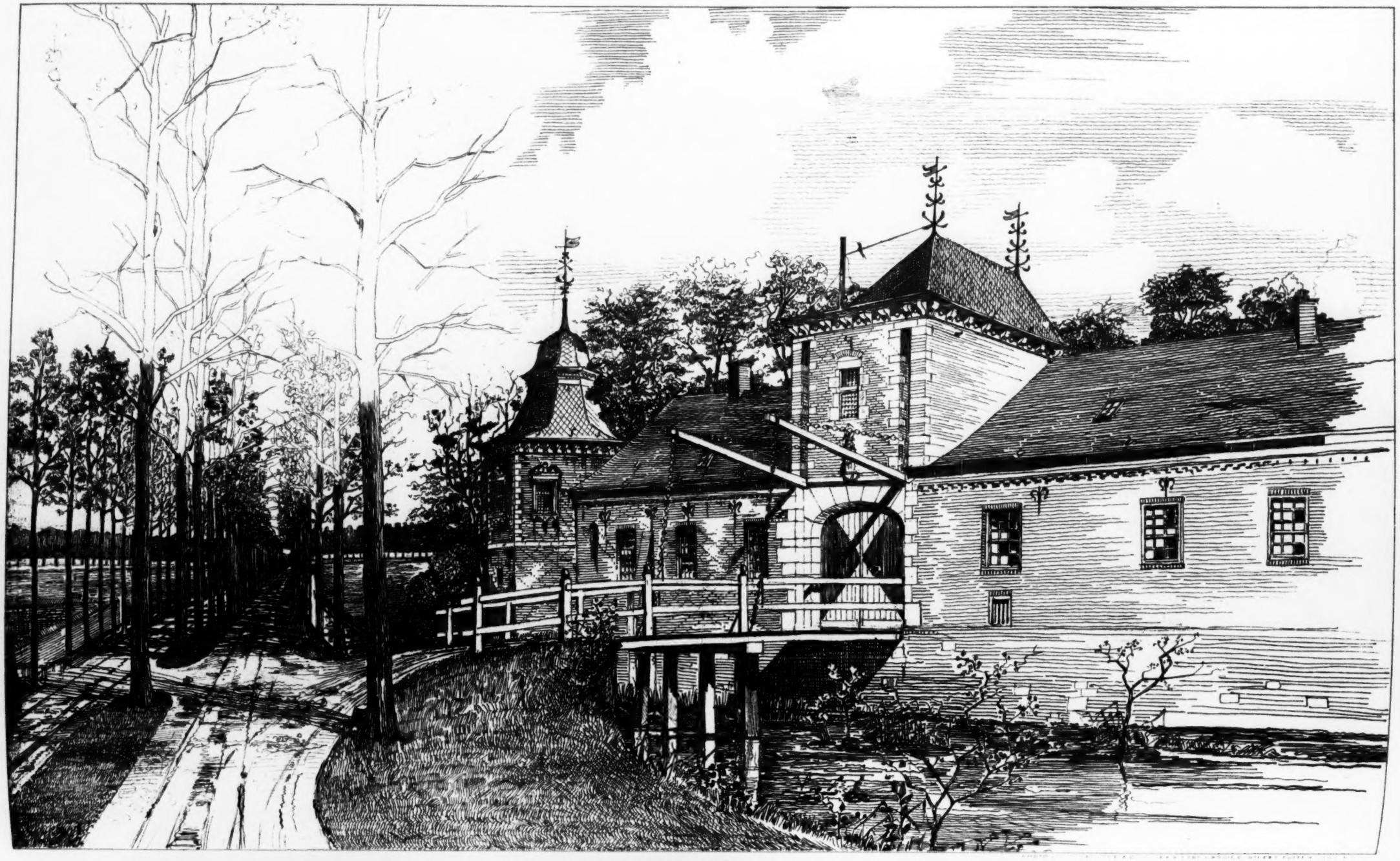
GATEHOUSE, GEMERT CASTLE, BRABANT: AS RESTORED BY DR. CUYPERS, ARCHITECT.

INTERIOR VIEW.



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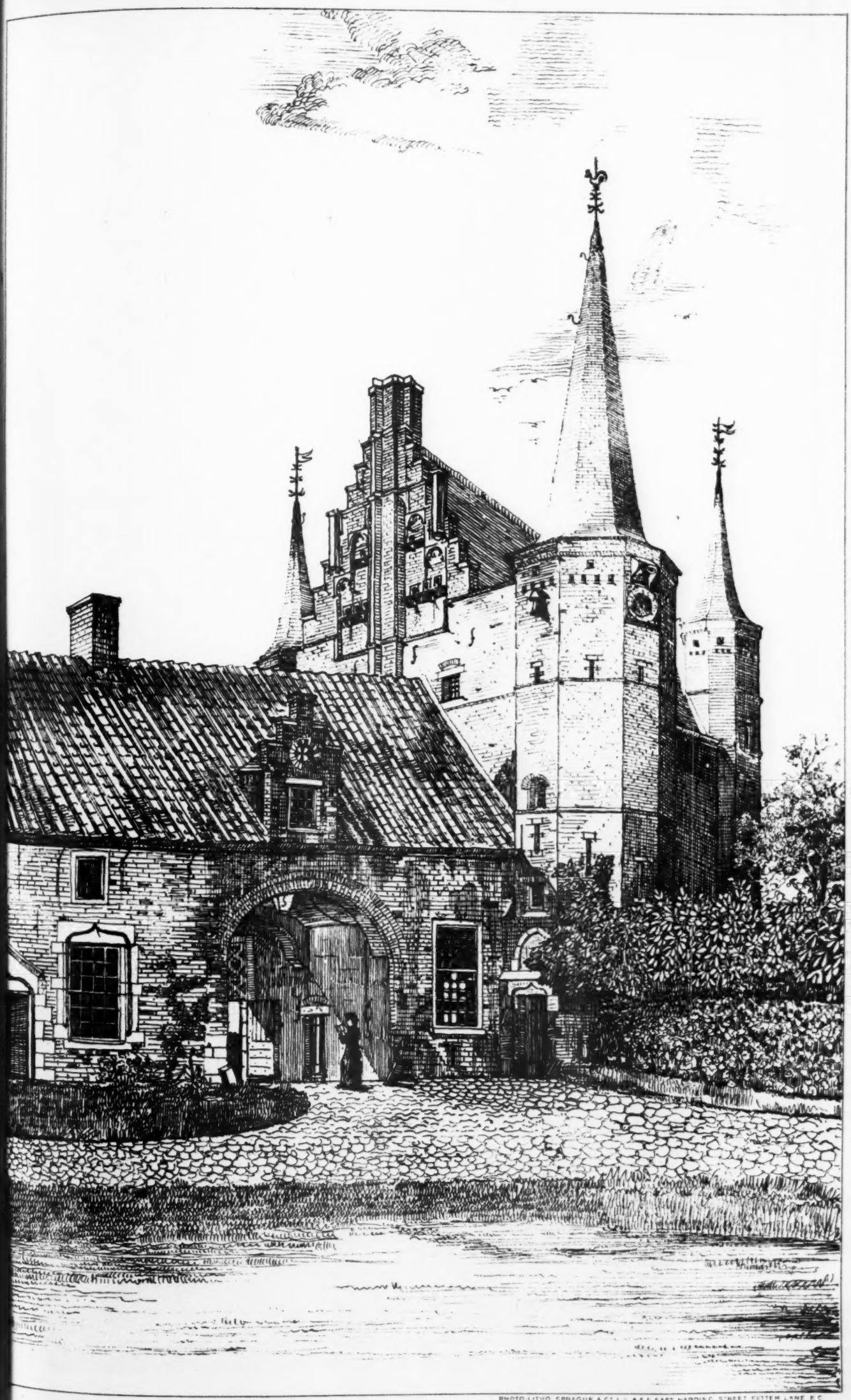

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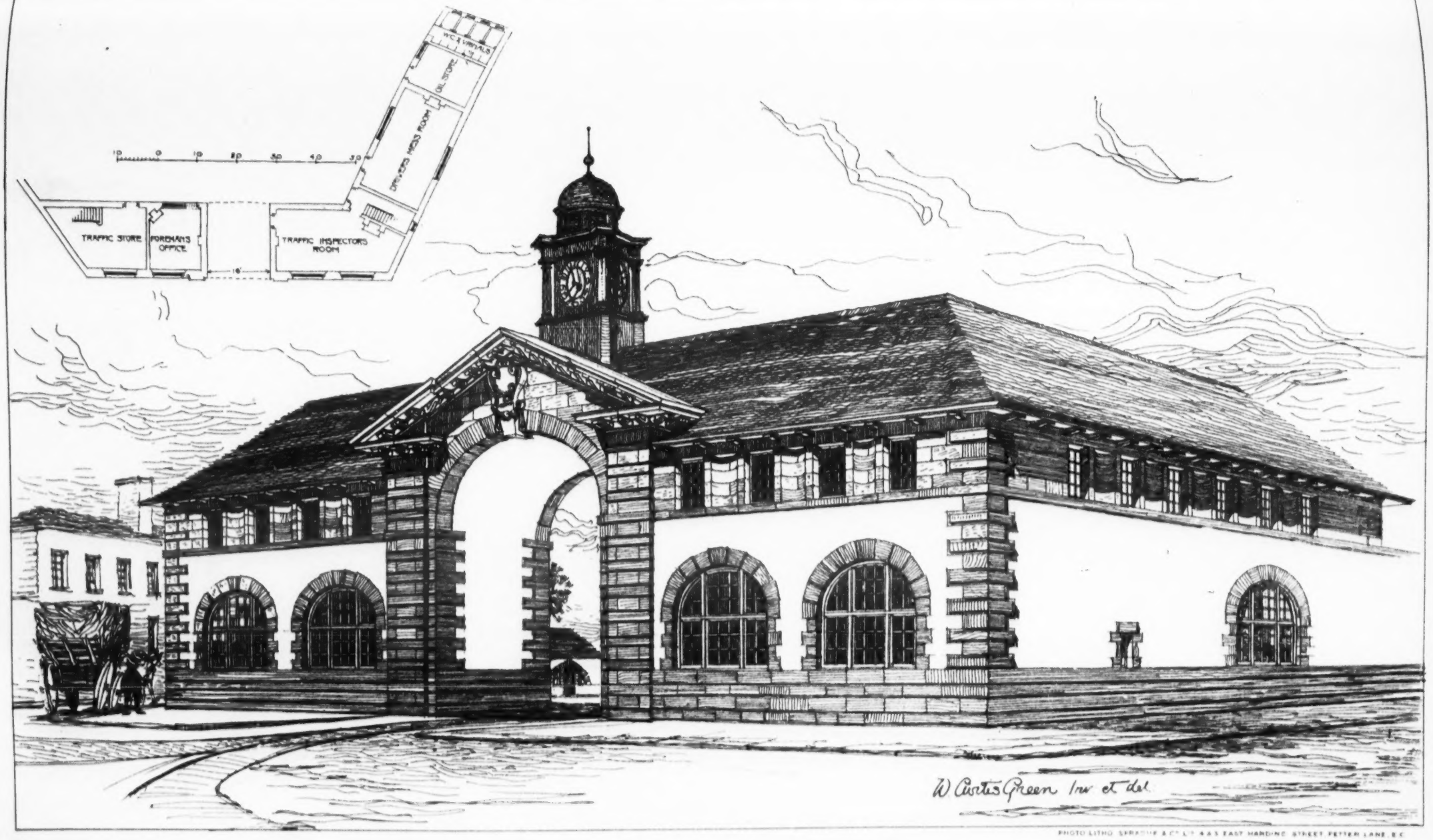

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BRISTOL TRAMWAYS: BRISSLINGON DEPÔT.

MR. J. CLIFTON ROBINSON, A.I.C.E., ENGINEER TO THE COMPANY. MR. H. F. PARSHALL, M.I.C.E., CONSULTING ENGINEER.

Mr. J. Beer, secretary, in response, said he regretted that in consequence of the death of their late esteemed secretary, Mr. J. W. H. Bedford, the duty of responding to the toast had fallen upon him. Mr. Bedford had been their hard-working secretary for over 30 years. During the last year the Institution had spent in pensions nearly 400*l.* and the total amount paid away since the Institution was founded was over 10,000*l.* Pensions had in some cases been increased for men from twelve to fifteen shillings per week, and in the case of widows from five to six shillings per week. The total income for the past year was 679*l.* and the expenditure 539*l.*

The toast of "The Architects and Surveyors" was then proposed by Mr. Thos. Gregory, who said that London of to-day, compared with London thirty or forty years ago, was a much more beautiful city architecturally, and for that improvement their thanks were due to architects. Not only was there an improvement in public buildings, but shops and domestic buildings were, as a rule, superior to those of the time he referred to. As to surveyors, if any one who knew anything about quantities would take a bill of quantities of the present day and compare it with one prepared thirty years ago, it would be apparent what an advance there had been. With the toast he coupled the names of Mr. W. J. Locke and Mr. T. M. Rickman.

Mr. Locke, in reply, said he did so, not as an architect, but as the official representative of the Royal Institute of British Architects. He had had certain relations with questions affecting them—for instance, some time ago the Association of Technical Institutions came before the Council of the Royal Institute with a proposal to hold an examination for clerks of works. That proposal was most carefully considered by a committee and by the Council itself, but difficulties arose both as to questions of principle and practical details; and, most unfortunately, and with great reluctance on the part of the Institute, the proposal had to be abandoned. He was glad to be present at their dinner, for now he would be able to refute that gross slander which he had heard, that clerks of works and builders' foremen were sworn enemies. He believed that no longer, for he saw a fundamental union between them for the benefit of their useful institution. As to architecture, the history of a nation was written not only on the façades of her palaces, but even more indelibly upon every brick of her meanest cottage, and he would say: Give me the making of a nation's buildings and I care not who makes her history.

Mr. Rickman said he had pleasure in recalling to mind acts of kindness and assistance by foremen and clerks of works to his father in his old age and infirmities. He was indebted specially to those who had been foremen and clerks of works for early introduction to building works and for a large part of the information he had gained when in his articles. As an architect, he had valued their information as to the materials available in different localities, and the sizes and shapes obtainable in the course of ordinary business, and it was to be wished that architects availed themselves more of such information. As a surveyor he had to obtain information as to hidden work in the investigation of variations, and he found, though there was a disposition on the part both of foremen and clerks of works each to correct the information conveyed by the other, between them the true facts were generally found out. He remembered an instance where a foreman, in explaining the sizes of certain timbers, had stated to him that some were 6 in. deep and some 7 in. and that they averaged 8 in. He would take the liberty of recommending them all to give accurate information, and for their own sakes to tell a story that should hold water. He would also commend to their notice the advantage of perusing a specification with the object of ascertaining the object of the writer rather than by taking advantage of the accidental omission or presence of a stop to obtain a forced meaning from the allocation of the words. It was a great pleasure to meet so many men of vocations which he so highly valued, and he wished them success in their objects of self-improvement and mutual assistance.

Mr. E. Searchfield proposed the toast of "The Builders and Contractors," coupled with the name of Mr. Thos. Gregory.

Mr. Gregory, in response, said, as to the Building Trades' Gift to the Nation, that merchants were giving the material for the homes which were to be erected at Bisley for wounded soldiers, and he hoped that the workmen would give something towards the cost of the erection of the buildings. The homes would be occupied by soldiers who have been in the building trade at some period of their lives.

Mr. J. Stapleton then proposed "The Governor (Mr. F. J. Dove), Trustees (Messrs. F. J. Dove and J. Howard Colls), Directors (Messrs. J. H. Colls, J. Greenwood, and other), and Donors, Honorary Subscribers, and Visitors."

Mr. F. L. Dove responded, and recommended the members of the Institution to try and get additional members.

Mr. F. Hann proposed "The Chairman," who, in reply, said that the Institution must get all the help it could from outside, but they must not forget that it rested with themselves to make the Institution an even greater success than it is.

The toast of "The Press," proposed by the chairman, and acknowledged by our representative, brought the proceedings to a close.

It was announced that the amount of subscriptions and donations promised during the evening was 150*l.* 18s., including 25*l.* from the Chairman.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring Gardens, Lord Welby, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Bethnal Green Guardians 10,475*l.* for provision of an infirmary, and the Camberwell Guardians 5,950*l.* for the purchase of land and premises.

Asylums.—The report of the General Purposes Committee stated that the Committee had considered the following resolution of the Council of July 18 last:—"That the supplemental estimate submitted by the Finance Committee for the expenditure of a further sum of 70,000*l.* for the provision of the Heath Asylum, Bexley, be approved, and that it be referred to the General Purposes Committee to inquire into the circumstances of the case." The report proceeded as follows:—

"We appointed a Sub-Committee to inquire into the matter, and we have received their report, together with a statement of the circumstances attending the cost of the erection of this asylum. . . . On July 3, 1894, the Council granted a sum of 2,000*l.* for the preparation of plans, &c., for an asylum, at a cost not exceeding 300,000*l.* In the following November the Asylums Committee reported that that sum would not be sufficient, and asked for 350,000*l.*, that sum being the lowest for which it was, in their opinion, possible to build an asylum for 2,000 patients. The Council concurred. Early in 1895 the Finance Committee asked for details of the estimate, but it was pointed out that, as the plans of the building were only then in preparation, it was impossible to put forward a detailed estimate. In November, 1895, the Committee reported to the Council that they thought it probable that the 350,000*l.* might be exceeded in consequence of the larger proportion of accommodation for special cases which they had thought it necessary to provide, although, if the conditions of contract were modified sufficiently to attract competition, they were of opinion that the excess, if any, would be slight. A detailed estimate was eventually submitted in February, 1897, but in forwarding it to the comptroller with a view to its being laid before the Finance Committee, it was stated that the Asylums Committee did not bind themselves in any way to the details, and that the expenditure under the various heads had been limited to the estimate. It will be seen from the statement that on October 26, 1897, the Heath Asylum Sub-Committee reported to the main Committee that it was probable that the Council would have to be asked for a further vote; but the Committee only 'received' the report. It was not until July, 1898, that the Committee informed the Council that there was no doubt that the 350,000*l.* would be exceeded, but to what extent they were then unable to say. The Committee made no recommendation in the report. In June, 1899, the Clerk of the Asylums Committee submitted a statement to the Sub-Committee comparing the original estimate submitted by the Finance Committee with probable cost (420,000*l.*). . .

As pointed out above it was clear to the Asylums Committee, as far back as 1897, that the vote of 350,000*l.* would be exceeded, and after a careful consideration of all the circumstances, we find—(*a*) That there has not been compliance with Standing Orders in regard to supplemental estimates. (*b*) That in face of the distinct resolution of the Council of 1894, limiting the expenditure to 350,000*l.*, the Asylums Committee should have intimated at an earlier stage the impossibility of complying with such resolution. (*c*) That the original estimate submitted to the Council on February 16, 1897, was in fact so rough an apportionment of the vote of 350,000*l.* as to be of little value as a guide to the probable ultimate expenditure. (*d*) That whilst the asylum will probably cost at least 70,000*l.* more than the sum voted, there is no reason to think that it has not been erected at a fair and reasonable cost, but the ultimate cost has yet to be ascertained. We recommend—That the Council do concur in the above conclusions."

The same Committee submitted the following report in regard to Horton Asylum:—

"We have also proceeded under the following resolution of the Council of November 28, 1899, viz.:—That the supplemental estimate submitted by the Finance Committee, for the expenditure of a further sum of 106,130*l.*, for the provision of the Horton Asylum be approved, and that it be referred to the General Purposes Committee to inquire into the circumstances of the case. . . . .

On December 15, 1896, the Asylums Committee reported to the Council that, having regard to the extreme urgency of the matter, they proposed to utilise the plans of the Heath Asylum, Bexley, for the purpose of the erection of the seventh asylum, viz., Horton. The Committee stated in their report that 'the grant for the Heath Asylum, Bexley (exclusive of site and furnishing), was 350,000*l.*, but that it was probable that the cost of the Horton Asylum would exceed this sum, as the subsoil was not so favourable, and the cost of bringing the building material on to the site would be greater.' The Committee stated that they did not, however, intend at that time to ask the Council for more than 350,000*l.* In submitting the estimate of 350,000*l.* the Finance Committee stated that the further expenditure on equipment, &c., was estimated approximately at 50,000*l.*, and that the total expenditure in connexion with the asylum might be taken at, say, 410,000*l.* (the 10,000*l.* represented the proportionate cost of acquisition of the whole of the Horton Manor estate). The estimate of 350,000*l.* was approved by the Council. From the above it will be seen that, although it was proposed that the Horton Asylum should, as far as possible, be a reproduction of the Bexley Asylum, the cost would probably be greater than in the case of the Bexley Asylum. The Committee, therefore, to a certain extent, safeguarded themselves in respect of the ultimate cost. Subsequently, as will be seen from the statement, they brought up to the Council various reports as to the acceptance of contracts, and as to certain variations in the plans of the asylum indicating that extra cost would be involved in the erection of the asylum, and it is contended that, having, in the first instance, informed the Council of the improbability of the work being done for the sum asked for (which was practically a vote on account), they have taken the earliest opportunity (viz., in their report to the Council of November 21) of complying with the Standing Order No. 264, and have obtained the Council's approval to the increased expenditure, which, so far as their information at present goes, will be sufficient for the purpose, *i.e.*, exclusive of equipment, for which a separate estimate will be submitted in due course.

After a careful consideration of all the circumstances attending the cost of the Horton Asylum we have come to the following conclusion—'That the Council, at the time of sanctioning the erection of the Horton Asylum, was informed by the Asylums Committee that, though they asked for a grant of 350,000*l.* only, the cost of foundations and superstructure would probably exceed this amount, and that since then the Committee have on several occasions advised the Council that the original estimate would be exceeded.' We recommend that the Council do concur. . . ."

The recommendation in regard to Heath Asylum was agreed to after a long discussion.

Mr. Beachcroft moved the following amendment on the Committee's recommendation in regard to Horton Asylum:—

"That in the opinion of the Council a grave departure has been made in the case of the Horton Asylum from the usual and recognised practice as regards estimate, the estimate submitted to the Finance Committee, on which that Committee based its report to the Council, having been admittedly framed to meet the vote and not the actual cost; and that in consequence the Council has virtually been deprived of control over the large excess expenditure amounting to no less than 117,000*l.*"

After considerable discussion the amendment was rejected by a large majority, and the Committee's recommendation was agreed to.

London Docks.—On the recommendation of the General Purposes Committee it was resolved that the President of the Board of Trade be requested to receive a deputation from the Council to urge the necessity of a Parliamentary inquiry into the present condition of the docks and Port of London, and the best method of remedying the defects in administration and accommodation.

Queen's-road, Chelsea.—The Improvements Committee recommended, and it was agreed:—

"That the estimate of 1,000*l.* submitted by the Finance Committee be approved, and that the Council do contribute, on the usual conditions, one-half of the net cost of widening Queen's-road, Chelsea, at the Botanic-gardens, proposed to be undertaken by the Vestry of Chelsea, such contribution not to exceed the sum of 1,000*l.*, it being understood that the new width of the thoroughfare shall not be less than 40 ft."

Wardour-street, between Shaftesbury-avenue and Little Dean-street.—The Committee also recommended, and it was agreed:—

"That the estimate of 9,366*l.* 13*s.* 4*d.* submitted by the Finance Committee be approved, and that the Council do contribute on the usual conditions one-third of the net cost of the widening of Wardour-street, between Shaftesbury-avenue and Little Dean-street, as shown upon the plans forwarded by the Strand District Board, such contribution not to exceed the sum of 9,366*l.* 13*s.* 4*d.*"

Theatres, &c.—The following recommendations of the Theatres and Music-halls Committee were agreed to on certain conditions:—"That Mr. A. O. Collard be informed that the Council has no objection, so far as its regulations under Section 12 of 41 and 42 Vict., cap. 32, are concerned, to the arrangements shown on the two plans submitted by him in regard to the portion of the London Exhibitions, Earl's Court, known as Egypt."

"That Mr. A. O. Collard be informed that the Council has no objection, so far as its regulations under Section 12 of 41 and 42 Vict., cap. 32, are concerned, to the arrangements shown on the plan submitted by him in regard to a temporary iron building to be erected in that part of the London Exhibitions known as Elysia, and to be used as a refreshment bar."

"That Mr. A. W. J. Russell be informed that the Council has no objection, so far as its regulations under Section 12 of 41 and 42 Vict., cap. 32, are concerned, to the arrangements shown on the three plans submitted by him in regard to the lighting of the Paddington baths."

"That Mr. C. Lestock be informed that the Council has no objection, so far as its regulations under Section 12 of 41 and 42 Vict., cap. 32, are concerned, to the arrangements shown on the plan, submitted by him in regard to the proposed enlargement of the box-office at the Prince of Wales's Theatre, Coventry-street."

"That Mr. W. G. R. Sprague be informed that the Council has no objection, so far as its regulations under Section 12 of 41 and 42 Vict., cap. 32, are concerned, to the arrangements shown on the plan submitted by him in regard to the utilisation of the existing vaults on the north side of Wyndham's Theatre, Charing Cross-road, as dressing-rooms."

District Surveyors' Districts.—The Building Act Committee reported as follows, the recommendation being agreed to:—

"We have had under consideration a request of Mr. F. R. Meeson, the District Surveyor for the district of East Hackney (North), that the portion of his district situated to the south-east of Gainsborough-road and Temple Mills-road, should be transferred to the adjoining district of East Hackney (South) and North Bow, of which district Mr. A. Payne is the surveyor. Mr. Meeson points out that this portion of his district is separated from the remainder thereof by a portion of the Hackney Marshes, and is therefore inconvenient of access from his district office, and from other parts of his district. It is, however, more easily accessible by Mr. Payne, who has expressed his willingness to undertake the supervision, if it is added to his district. We are advised that the re-arrangement of boundaries under the London Local Government Act, 1899, will probably not affect the proposed alteration of districts, which we consider might with advantage be carried into effect on April 1 next. Mr. Meeson has intimated that he does not desire any compensation in respect of the relinquishment of the portion of his district above referred to. We recommend—(*a*) That the Council do alter the districts of East Hackney (North) and of East Hackney (South) and North Bow by the transference from the district of East Hackney (North) to the district of East Hackney (South) and North Bow, of that portion of the district of East Hackney (North) situated south-east of Gainsborough-road and Temple Mills-road; that the district of East Hackney (North) do consist of that part of the parish of Hackney lying north of the North London Railway, and bounded on the west by Lower Clapton-road and Upper Clapton-road to Stamford Hill, and on the south-east by Gainsborough-road, and Temple Mills-road to Temple Mills Bridge; that the district of East Hackney (South) and North Bow do consist of that part of the parish of Hackney lying south of the North London Railway and of Gainsborough-road and Temple Mills-road to Temple Mills Bridge, and bounded on the west by the centre line of Mare-street and Cambridge-road, and on the south and east by the boundary of the parish, and also that part of Bow north of the centre line of Old Ford-road and north-east of the embankment of the northern outfall sewer; and that such alterations do take effect on April 1, 1900.

(*b*) That the solicitor do prepare, and obtain the execution of an undertaking by Mr. Meeson, the District Surveyor of East Hackney (North), that he will make no claim for compensation in case a diminution of his income shall at any time hereafter arise owing to such alteration of the limits of his district."

Gladstone Memorial.—The Improvements Committee recommended the consent of the Council to the erection of the Gladstone Memorial on a site to the west of St. Clement Danes Church. The consideration of the Report was adjourned.

The Council soon after adjourned.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE annual general meeting of this Institution took place at the offices, 21, New Bridge-street, on the 27th ult.

Mr. Alfred F. Randall, President, in introducing the new President, Mr. Hy. Holloway, thanked the committee and officers, especially the treasurer, Mr. Brooks, for their assistance to him during his year of office.

Mr. Holloway referred to the good work it was very apparent, judging from the report, the Institution was performing. One point he much wished to emphasise, viz., the necessity for regular annual subscriptions to meet disbursements and expenditure so as not, as was too often the case in kindred societies, to rely on chance donations at annual dinners.

The adoption of report and balance-sheet was proposed by the President and seconded by Mr. Barrett and agreed to.

Thanks to retiring officers were, on the motion of Mr. Oldham, seconded by Mr. Mackness, accorded. The election of incoming officers was proposed by Mr. Newling, and seconded by Mr. Gammon, and agreed to. On the motion of Mr. Treasurer Brooks, seconded by Mr. H. W. Parkes, thanks were accorded to the new President for occupying the chair.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday, the following applications under the London Building Act were considered. Those applications to which consent has been given are granted on certain conditions. Names of applicants are given in brackets. Buildings are new erections unless otherwise stated:—

Lines of Frontage.

Lewisham.—Houses with bay windows and shops on the site of Nos. 49 and 51, Dartmouth-road, Forest Hill (Mr. G. Tolley for Mr. E. C. Christmas).—Consent.

Width of Way.

Kensington, South.—That the consent of the Council of January 23, 1900, to the erection of two studios at the rear of Nos. 46 and 47, Campden Hill-square, Notting Hill, with the forecourt boundary or fence at less than the prescribed distance from the centre of Aubrey-road (Mr. C. W. M. Price for Messrs. Battam & Co.) be modified by the omission of the condition requiring all the parties interested to enter into an agreement to remove the forecourt boundary or fence when required by the Council so to do.—Agreed.

Southwark, West.—That the application of Messrs. Fowler & Hall for an extension of the periods within which the erection of a building on part of the yard in front of No. 17, Bankside, Southwark, adjoining Southwark Bridge, was required to be commenced and completed, be granted.—Agreed.

Width of Way and Space at Rear.

Kennington.—A three-story building at the rear of Nos. 94 and 96, Upper Kennington-lane, Kennington, to abut upon Loughborough-street and a roadway leading out of that street (Messrs. Hayward Brothers, Limited).—Consent.

Width of Way and Construction of Building.

Greenwich.—Retention of a temporary wooden bar on the north side of River-side, Charlton, opposite the "Anchor and Hope" public-house (Messrs. Perry & Reed, for Messrs. Hoare & Co.).—Consent.

Formation of Street.

Woolwich.—That an order be issued to Messrs. Church, Quick, & Whincop, sanctioning the formation or laying out of a new street for carriage traffic to lead out of the east side of Wickham-lane, Plumstead (for Queen's College, Oxford).—Agreed.

Formation of Street, Space at Rear, and Construction of Shed.

Wandsworth.—That an order be issued to Mr. F. J. Brewer sanctioning the formation or laying out of a mews out of the west side of High-street, Putney, next No. 104; the setting-back of No. 104, High-street, so as to widen a portion of that street; the construction in such mews of an open shed; and the erection in such mews of buildings with open spaces at the rear (for Messrs. Spencer, Santo, & Co.).—Agreed.

Lines of Frontage and Working-class Dwellings.

Bow and Bromley.†—A block of two intended dwelling-houses to be inhabited by persons of the working-class on the east side of Wellington-road, Bow-road, Bow (Mr. C. A. Brereton for the Whitechapel and Bow Railway Company).—Consent.

Bow and Bromley.†—That the Council do make an order as follows:—Whereas Mr. C. A. Brereton, of No. 21, Delahay-street, Westminster, S.W., on February 2, 1900, under the provisions of Section 42 of the London Building Act, 1894, delivered on behalf of the Whitechapel and Bow Railway Company, at the County Hall, plans of a laundry and a block of three intended dwelling-houses, to be inhabited by persons of the working class, and proposed to be erected, not abutting upon a street, on a plot of land on the east side of Wellington-road, Bow-road, Bow. . . . Now the Council does by this order sanction the said plans so far as Section 42 of the said Act is concerned. . . .—Agreed.

Dwelling-houses on Low-lying Land.

Woolwich.—Seven dwelling-houses on low-lying land, situated on the north side of Bostal-lane, Abbey Wood, Plumstead (Mr. T. J. Young for Mr. W. T. Hills).—Consent.

Greenwich.—A building, to be used partly as a dwelling-house, on low-lying land known as lot 18 in Trafalgar-road, Greenwich, at the corner of Pelton-road (Mr. A. Roberts, for the London and Provincial Bank, Limited).—Consent.

The recommendations marked † are contrary to the views of the Local Authorities.

COMPETITIONS.

BARNSLEY CHURCH AND VICARAGE.—The premiums in this competition have been awarded as follows:—First, 50 guineas, to Mr. Goodwin S. Packer, architect, Shaftesbury-buildings, Southport; second, 30 guineas, to Mr. Ernest W. Dyson, architect, Horwich, near Bolton; third, 20 guineas, to Mr. Charles S. Errington, Victoria-buildings, Newcastle-on-Tyne.

ARCHÆOLOGICAL SOCIETIES.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—At the meeting of this Association on the 21st ult., Dr. W. de Gray Birch, F.S.A.V.P., in the chair, a paper was read by Dr. Brushfield, F.S.A., on "Norman Tympana, with Especial Reference to those of Derbyshire." There are many Norman tympana still remaining in the churches of this country, some of which were inspected by the members of this Association during the recent congress at Buxton. The principal doorways of perhaps the majority of the later Anglo-Saxon churches had heads of semicircular form, which feature was also continued into and to the end of the Norman period, but the architects of the twelfth century filled up the space between the arch and the square head of the door with a stone slab or tympanum. This tympanum was often left quite plain, but in very many instances it was carved with devices of extremely varied character. Some bore patterns of geometric figures, chequers, &c. The number of these, however, was comparatively few, the majority being sculptured with representations of the human form, of animals real or fabulous, and with attendant scroll work. Scriptural scenes were also represented, both symbolically and literally. The whole was usually surrounded by a border, generally of a simple kind, but occasionally richly decorated. Except in the case of a simple figure, like that of the Agnus Dei, few of the sculptures contain a repetition of the same subject, or bear evidence of being the work of the same designer; the representation of Christ in Glory forming one of he exceptions to the former, and the tympana preserved in the Derbyshire churches at Findern and Tissington to the latter.

In cases where the tympanum does not occupy the whole space between the arch and the door-head, a separate lintel is fixed, generally on a level with the capitals of the shafts supporting the arch, and this lintel is generally carved, with a subject quite different from that on the upper stone, as at Little Langford, Wilts, and Dinton in Bucks; occasionally, however, the sculpture of the tympanum proper is continued into the lintel, as in the prior's door at Ely Cathedral. There is very considerable difference in the character of the sculptures on the tympana of the south and north door respectively, although not many churches possess both at the present time. The north door is traditionally known in many churches as the Devil's door, from its being the entrance set apart for the use of lepers, cagots, and other proscribed races, and the sculpture on the tympanum of each door was intended to demonstrate the different kind of lesson each was intended to convey to the worshippers; thus, on the tympanum of the north door of Egloskerry church in Cornwall is seen the sculpture of the Dragon with tufted tail, and on that of the north door at Quenington, Gloucestershire, the subject sculptured is the Harrowing of Hell. On the tympanum of the south door at Egloskerry church the Agnus Dei is sculptured, and the crowning of the Virgin on the tympanum of the south door at Quenington. Symbolic sculpture is sometimes found carved in the arch itself as at Findern and Tissington in Derbyshire. In the Derbyshire churches there is a preponderance of ordinary animals represented over the fabulous ones represented elsewhere which, it seems reasonable to suppose, is owing to so many of the churches being situated either within or upon the borders of the great Midland forest of early times, which were full of wild animals like the boar and the wolf, much feared by the sparse inhabitants of the district for their ferocity, and therefore represented over church doors either as types of evil or as showing by their adoration the power of the Cross. In both cases they would appeal to the eyes of the ordinary worshippers from the originals being so well known to and feared by them. An interesting discussion followed the paper, in which Mr. Gould, Mr. C. R. B. Barrett, Rev. H. J. D. Astley, and others took part, the Chairman remarking that a good service would be rendered to archæology by arranging an index to all sculpture, tympana, and details of architecture other than technical lines and areas.—The Rev. H. T. Owen, M.A., read a paper upon "Recent Discoveries at Valle Crucis Abbey," in which he described the various works undertaken during the past six years and the results obtained. Several of the buttresses at the east end of the Abbey, the central window of the Chapter House, and the Abbot's throne, all of which were in a ruinous condition, have recently been restored at the expense of Sir Theodore Martin. In July last some further excavations were commenced under Mr. Owen's supervision in the cloister, where a building had stood which had for many years been used as a stable. After clearing away about 3 ft. of earth and débris, the ancient walls of a bath were discovered; and at a lower depth much water was met with, which stopped the work for a week or two. A pump was obtained, and kept going all day to keep down the water, and at length, at a further depth of about 4 ft., what is believed to be a Roman bath was met with. The bath measures about 21 ft. by 9 ft. A second fine bath was discovered to the west and there is a third, which it is intended to excavate as soon as funds permit. Mr. Owen thinks the whole area of the cloisters was a Roman sanatorium. Some curious finds were met with in the course of these excavations, including a brass of Constantine, some silver pennies of the first two Edwards, and a token of the eighteenth century. In the first ages of Christianity the large bath may have been used as a baptistry, and at the bottom of this bath some embroidered hair was found. (It is related that in the early period the newly baptised had to cut off the plaited hair as a token that they were not again to go back into the world.) In this bath also were discovered some ancient beads, probably belonging to a rosary. Roman pottery and oyster shells were met with in the course of the excavations. Many of these articles discovered were exhibited, including a copy of the Koran in Arabic, which was found built up in a wall, and is thought likely to have been brought over by a Saracen prisoner during the wars of the Crusades. Dr. Brushfield considered further evidence was required before the actual character and period of the discoveries could be demonstrated, and Dr. Birch said archæologists should hold their opinions in abeyance pending the result of further excavation and examination. About 50*l.* is still required to complete the excavation of these baths.

BOOKS RECEIVED.

BRUGES: AN HISTORICAL SKETCH. By Wilfrid C. Robinson. (Louis De Plancke, Bruges.)

A TREATISE ON STAIR BUILDING AND HAND RAILING. By W. and A. Mowat. (George Bell & Sons.)

FIRE TESTS WITH SAFES. (No. 42 of the British Fire Prevention Committee's Reports.)

FIRE TESTS WITH PROTECTIVE COVERINGS. (No. 43 of the British Fire Prevention Committee's Reports.)

PRACTICAL STAIRCASE JOINERY. By Paul N. Hasluck. (Cassell & Co., Limited.)

NOTES ON BOILER TESTING. By Frederick Grover. (The Technical Publishing Company, Limited, Manchester.)

STODDART'S IMPROVED SEWAGE FILTER. By F. Wallis Stoddart. (Hodgetts, Limited, Clifford's Inn, Fleet-street, E.C.

Correspondence.

To the Editor of THE BUILDER.

ARCHITECTURAL FEATURES OF HOLBORN TO THE STRAND STREET.

SIR,—I notice in the Report of the Improvements Committee of the London County Council, published in your last issue, in reference to the new street from Holborn to the Strand, and a proposed architectural competition for the buildings to be erected on the north side of the Strand, it is stated that the Council authorised their Architect to have a conference with some of the leading members of the Royal Institute of British Architects, with the result that the conditions suggested for this competition have the full approval of the Council of the Institute.

I wish to point out that this statement as to the full approval of the Council of the Royal Institute of British Architects is entirely without foundation.

At present, the only points that have come before us officially for consideration were as to our agreeing with the principles of such a competition being instituted, and the style of architecture to be adopted, which points were embodied in a note from the Architect of the London County Council to our Council. As to the first, our Council certainly considered it a step in the right direction towards preventing the recurrence of such a disgrace to a civilised community as the erection of Shaftesbury-avenue and Charing Cross-road have proved, and are quite willing to co-operate in such a measure. As to the second point, we suggested that architects should be unfettered in their choice of style.

As to the details of the competition they have never been placed before us, and your publication of the report has supplied the first intimation of them, and I do not think it likely that they would altogether meet with the approval of our Council.

Whatever may have been privately said to individual members of the Royal Institute of British Architects, or whatever views may have been expressed, until the matter had officially come before the Council of the R.I.B.A. for deliberation, no such statement as to our views should have been made to the London County Council. WM. EMERSON, President.

9, Conduit-street, February 28, 1900.

[We are informed that in the revised Report of the Improvements Committee, which will be brought up at next Tuesday's meeting, the paragraph reads: "We believe the foregoing conditions will have the full approval of the Council of the Institute." We understand, however, that the facts are as stated in Mr. Emerson's letter. The previous Report appears to have been very carelessly worded.—ED.]

SIR,—May I be permitted as a practical man—with the most profound deference to the London County Council and their architectural advisers—to say that (as it is stated "the buildings may be intended for commercial purposes") no greater mistake can be made than to design their elevations without at the same time preparing the plans to suit them? Yet, as I understand the conditions printed in your last issue, none but block plans of the intended structures are to be asked for!

I could furnish analogous London cases where a similar process was unwisely adopted, even against retained professional advice; and the natural result followed, viz., that the internal arrangements were ruined for the sake of the external appearance; and the anathemas of the occupants and lessees are to this day descending upon the heads of those originating, and the architects doomed to carry out, plans fitted to other men's elevations—which is as bad as having to build on "another man's" foundation, if not worse.

It is as much in the public interest as in that of the architectural profession and of its Institute, whose principles I have ever striven for, that I presume thus to call attention to that which would necessarily end in renewed diatribes against both.

WILLIAM WAINE.

PROPOSED NEW ASYLUM, YORK.

SIR,—In your issue of February 24, under the heading "Proposed New Asylum, York," you give an account of the decision of the York City Council regarding their adoption of the Middlesbrough Asylum plans, which they appear (according to your report) to "commandeer" on the principle that, having purchased "for a few shillings" the Lunacy Commissioners' *Appendix to their Fiftieth Report to the Lord Chancellor*, they also purchased the copyright to the plans therein contained.

While it is gratifying to the designers of the Middlesbrough Asylum, and myself, that, after a careful inspection of all they saw here of the design and working of this Asylum, the York City Council intend to reproduce this plan for York City Asylum, yet I desire, as one of the medical superintendents with whom the committee conferred, to dissociate myself from the mischievous doctrine against the employment of specialists in asylum construction, which Mr. Councillor Mansfield quotes as the opinion of the "doctors with whom the committee spoke."

In the planning, construction, fitting, and equipment of this asylum the Visiting Committee of the Middlesbrough Council consulted and cordially co-operated with specialists, with the happiest results, and I impressed this fact upon the deputation of the York City Council and their Surveyor when they visited this asylum. As far as I could judge of their opinion, I understood that they and their Surveyor were quite satisfied that the right course would be to consult some specialist of good standing and experience, in accordance with which view, I believe they asked Mr. Wood, of Surrey-street, London, W.C., to meet them.

THE MEDICAL SUPERINTENDENT.

FIRE-RESISTING CEILINGS.

SIR.—Referring to the letter from Mr. Ellis Marsland, which appeared in your issue of February 17 last, the matter so ably dealt with by Mr. Marsland is of such very great interest, and of so much importance to the building trade, that we feel it is unnecessary to apologise for reintroducing the subject.

This most valuable trial, as showing to what extent wooden floors and the use of coke breeze concrete as a fire-resisting material can be trusted, has no doubt astonished a good many of your readers, but we venture to believe that it has pleased a still larger number, as there is no doubt that the building trade generally, as well as the large body of architects and surveyors, would hail with delight the advent of the day when iron construction, so largely employed in up-to-date ceiling building, would be used in conjunction with wooden joists, and at the same time the latter take their own part in fireproof construction.

The London County Council knows to what extent they can trust wood and iron, as many valuable trials by the British Fire Prevention Committee have been made, and their officers are to be seen at all the trials carefully taking notes, but so far, may we say, perfection in the result of the said trials has not been arrived at. Now this is not to be wondered at considering the severe nature of these and the materials tried. Iron is liable to expand with heat and to throw off in the process of expansion any protection like concrete (of whatever it may be composed), unless its under surfaces, which are most naturally first affected, are in themselves protected. Wood, of course, is inflammable, and, as seen in the report of Mr. Marsland, about 2½ in. of the soffit had been burnt away; and we trust that he will pardon us for disagreeing with his deductions as a whole, while we in some respects with pleasure confirm them.

Mr. Marsland concludes in these words:—"Had there been a plaster ceiling with *metal lathing*, I think the result of the test would have been even more satisfactory, which, it is hoped, will shortly be tried."

We unhesitatingly admit that a plaster ceiling in itself is a fire resisting material, but, in regard to the words "metal lathing," we do not think metal in itself is fire resisting, and, as a key for plaster, it has the same disqualifications which iron joists, girders, and stanchions have; that is to say that, when heated, it will expand and throw off its protection, although not to the extent of heavier bodies

of metal, and it may be doubted if it has the advantages which Mr. Marsland is expecting from it.

It was with a view of overcoming these difficulties that *wired terra-cotta lathing* was introduced to the trade; the wire is covered by terra-cotta, which is baked on and forms an admirable key for the plaster. We have pleasure in informing your readers and the building trade that we have made arrangements with the British Fire Prevention Committee for a trial of a London County Council wooden and coke breeze floor similar to the one above referred to, but protected with a ceiling formed of plastered wired terra-cotta lathing; so that Mr. Marsland's letter to your journal has already borne fruit, and he will have his hopes fulfilled and (with confidence we add) his deductions confirmed.

In a recent trial by the British Fire Prevention Committee a partition made with our lathing 2½ in. thick stood a fire test of over 2,000 deg. without any fire passing through it.

JOHN BURGESS, Secretary,
Mural and Decorations Syndicate, Limited.

The Student's Column.

DETAILS OF STRUCTURAL IRON AND STEEL.

8.—UNIT FORMS AND SECTIONS.

A STRUCTURE in iron or steel consists of two or more members, or pieces, which touch each other and are connected together at portions of their surfaces called joints. Each individual piece may be a simple member, consisting of metal in some unit form, such as a rolled joist; or it may be a compound member, composed of two or more unit forms joined together, as may be most suitable and convenient. Strictly speaking, compound members are themselves describable as structures, but this application of the term is usually limited to important members, such, for example, as trusses or large compound girders.

Before proceeding to consider the details involved in different modes of connecting together various manufactured forms of iron and steel, it will be convenient to illustrate the chief unit sections which are available for structural work. Any individual bar can be used, as a strut, a tie, or a beam; and the nature of the stresses and strains to be resisted will depend upon the manner in which the bar is employed. When different methods of application come to be examined in subsequent chapters, we will consider strength, form, and dimensions in relation to structural requirements. At present it is only proposed to give such details as may render more intelligible our inquiry as to the theory and practice of joints and connexions.

Cast iron is so easily moulded in the foundry to any desired shape that unit forms are seldom made and kept in stock for the building up of compound members. There are, of course, certain standard castings for some purposes, which are made suitably for being joined together so as to form complete members; but so far as structural work is concerned, the use of cast iron is almost exclusively limited to cases where the primary manufactured form of material is also the ultimate form of the member.

Wrought iron and steel, which can only be moulded to definite shapes on a large scale by powerful machinery, is necessarily produced in a variety of unit forms or sections, from which the structural engineer can select such as may be most appropriately used either in their existing state or after suitable manipulation. Iron and steel plates are obtainable of any length, width, or thickness which are likely to be demanded by the architect, and there are numerous other sections, the chief details of which will be found in the summary given at top of next column.

Most of the particulars in the following table are collated from a hand-book published by Messrs. Dorman, Long, & Co., of Middlesbrough, and although this book does not in any way compare with the elaborate volumes issued by manufacturers in the United States, yet it is a distinct advance upon anything of the kind hitherto known in this country. Most of the section books and sheets issued for the convenience of architects, engineers, and builders contain little more information than the weights, dimensions, and safe loads of certain forms of material. The user is not always told whether the iron or steel is of

Table XXII.—Some Standard Sections of Rolled Iron and Steel.

Fig. 17.	Designation.	Transverse Dimensions. Minimum.	Transverse Dimensions. Maximum.	Length. Ordinary.	Length. Maximum.
a	Round bars	¾ in. dia.	8 in. dia.	24 ft.	60 ft.
b	Square ,,	¾ in. sq.	4 in. sq.	24 ft.	60 ft.
c	Flat ,,	1½ in. by ¼ in.	18 in. by 1 in.	40 ft.	60 ft.
d	Hollow half round bars.	1½ in. by ⅜ in. thick	3½ in. by ½ in. thick	—	—
e	Solid half round bars.	1½ in. by ¾ in. 2 in. by ½ in.	3½ in. by 1¾ in.	—	—
f	Pillar section	3 in. radius ½ in. thick	6 in. radius ¾ in. thick	—	60 ft.
g	Angles, equal	1 in. by $\frac{5}{32}$ in.	8 in. by ½ in.	30 ft.	60 ft.
h	,, unequal	2 in. by 1½ in. by $\frac{7}{32}$ in.	7 in. by 4 in. by ¾ in.	50 ft.	—
i j	Tees (Iron) ,, (Steel)	1 in. by 1 in. 1½ in. by 1½ in. by ¼ in.	— 6 in. by 3 in. by ½ in.	50 ft. 50 ft.	60 ft. —
k	Bulb tees	4½ in. by 6 in. by $\frac{5}{16}$ in.	6½ in. by 10 in. by $\frac{14}{16}$ in.	—	—
l	Bulb-bars	6 in. by $\frac{6}{16}$ in.	12 in. by $\frac{14}{16}$ in. 7 in. by 1⅛-1½ in.	—	—
m	Bulb-angles	3¾ in. by 2½ in. by $\frac{5}{16}$ in.	9 in. by 3½ in. by $\frac{18}{16}$ in.	—	—
n	Hatchway sections	2½ in. by 1¾ in. (over all)	6 in. by 2$\frac{15}{16}$ in. (over all)	—	—
o	Zed-angles	4 in. by 3 in. by 3 in. by $\frac{5}{16}$ in. web.	8 in. by 3½ in. by 3½ in. by ⅜ in. web.	—	—
p	Joists, or I-beams	3 in. by 1¼ in. by ¼ in. web.	24 in. by 8 in. by ⅝ in. web.	36 ft.	50 ft.
q	Channels	3½ in. by 1⅛ in. by $\frac{7}{16}$ in. web.	20 in. by 7½ in. by ⅝ in. web.	36 t.	50 ft.
r	Trough decking	12 in by 4 in. by ¼ in.	36 in. by 17½ in. by 1 in.	—	—

British or of foreign manufacture; he is not informed as to its mechanical properties under the influence of stress and strain; and apparently he is supposed to be willing to accept as correct certain safe loads, stated without information as to the data and co-efficients upon which calculations have been based. We do not for a moment mean to imply that the calculations in question are otherwise than accurate; but we are most decidedly of opinion that the architect, who is personally responsible for the safety of any building erected under his supervision, should be precisely informed as to all necessary details, so that he may know the characteristics of the material to be supplied, and that he may thereby check computations made by the manufacturer or the merchant. In the book to which we refer there is much useful information; the process of manufacture is named, and all steel is guaranteed to be capable of withstanding from 28 tons to 32 tons tensile strain per square inch, to exhibit an elongation of 20 per cent. in a length of 8 inches, and to possess a modulus of elasticity (E) equal to 12,000 tons. The manufacturers' estimates of strength can, therefore, be readily verified by the aid of these data and of ordinary rules, some of which are given in the section book itself.

JOINTS AND CONNEXIONS.

Under this general heading a great variety of operations are included. For example, columns and stanchions are frequently constituted by the joining together of castings or of rolled sections by means of bolts, rivets, or other fastenings. Completed columns and stanchions are connected one to another, or to other parts of a structure, and they are provided with suitable arrangements for the attachment of various details. Girders, again, are often built up of several sections of iron and steel, and the completed members are joined together, or connected with other members. Similar treatment is practised with regard to roof construction and other matters of detail.

Moreover, in many of these operations, it is compulsory that something should be done in addition to the joining together of two or more pieces of metal, inasmuch as the parts have often to be cut, forged, welded, or otherwise manipulated in order that they may be suitable for the specific purpose in view. As previously expressed, our wish is to preserve a natural and logical sequence with regard to the matters under consideration in the present series of articles, and we therefore propose to relegate the discussion of different typical connexions to future chapters, where they will be examined in conjunction with the integral parts of buildings for which they are more especially adapted. By the adoption of this course, we shall now be free to review in a general manner the theoretical aspects of the subject of joints, to summarise experimental data, and to refer briefly to some points connected with workshop practice.

So far as structural work is concerned, attention to the subject of joints may practically be confined to plates of iron and steel, and to sections such as those mentioned in Table XXII. Therefore the materials for treatment may be classified in the following way:—(*a*) plates, and wide flat bars; (*b*) narrow flat bars, round and square bars; and (*c*) bars of various special sections. When the question arises as to how two plates of metal are to be joined along two edges in the most satisfactory and efficient manner, it appears that the only perfect method is to be found in welding the edges. No doubt this is so in theory, but there are many practical difficulties, especially where long welded joints are concerned. Welding is effected by raising the temperature of two pieces of iron or steel until a white heat is almost attained, and then by pressing or hammering them firmly together. If the metal be of a quality well adapted for welding, if the surfaces be brought into close contact, if the proper form of joint be adopted, and if the surfaces be perfectly clean and free from oxide, cinder, and all foreign matter, the joined plate or bar may be as strong as, or even stronger than, the material in its original state. Unfortunately, however, conditional propositions are here so strongly in evidence as to detract very much from the favour with which the process of welding is regarded by the structural engineer. Experiments were made in 1860 by Mr. Bertram upon two forms of welded joint, the *scarf-weld* and *lap-weld* (figs. 18 and

Fig. 18.

Fig. 20.

Fig. 19.

19), where the lap was 1¼ in., the material being Staffordshire iron plates 24 in. long by 4 in. wide, and of three thicknesses, viz., ½ in.,

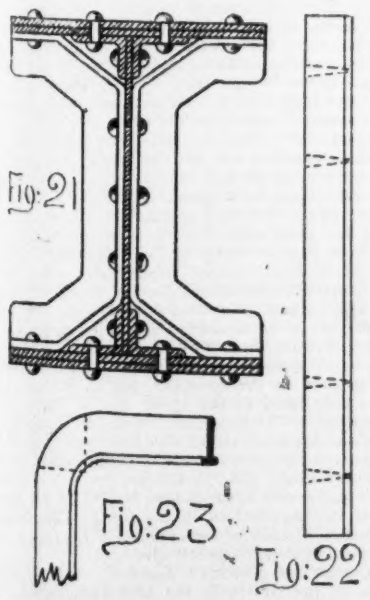
$\frac{7}{16}$ in., and $\frac{1}{2}$ in. The results observed in these tests are tabulated below :—

Table XXIII.

Description of Joint.	Form of Joint.	Comparative Strength (Original plate = 100).			
		$\frac{1}{4}$ in. Plate.	$\frac{7}{16}$ in. Plate.	$\frac{1}{2}$ in. Plate.	Average.
Scarf-weld ..	Fig. 18	Faulty	106	102	104
Lap-weld	Fig. 19	50	69	66	62

According to Mr. Kirkaldy, the loss of strength in welded joints is from 15 to 30 per cent., and experiments made more recently by Professor Bauschinger upon mild steel and ingot iron bars varying in area from 0·15 to 2·0 sq. in. indicated the strength of steel at the weld to be from 57 to 105 per cent. of the entire bar, whilst the average was 89 per cent. In the case of wrought iron, the strength at the weld was from 83 to 102 per cent., with an average of 95 per cent. It must be remembered that all the above were purely scientific experiments, in which every precaution would naturally be taken to ensure perfect connexions. What would have happened if the welds had been made in the course of ordinary workshop practice we do not care to suggest, but it is highly probable that the co-efficient "if," to which we have previously referred, would have exercised an important influence upon the results.

The Board of Trade rules for steam boilers contain the stipulation that steel plates which have been welded shall not be passed if subject to a tensile stress, and those welded and subject to a compressive stress shall be efficiently annealed. Government ordinances do not invariably command the highest possible respect, but in the present case they accord with practical experience, the teaching of which we have sufficiently demonstrated. Not only because of undesirable loss of strength, but also on account of cost, welded joints should be avoided as far as possible in structural work. When such a joint seems to be the most suitable method of connecting two parts, let us say, of a round, square, or narrow flat bar, the ends should be upset, or swelled out, in order that by the increase of sectional area some compensation may be provided for the diminution of unit-strength. Welding cannot always be dispensed with, especially when connexions have to be made involving the use of "stiffeners," similar to those shown in fig. 20. Cranks of this kind can only be made in one of two ways—either the surplus metal, protruded by the act of bending, must be taken up in thickening the web, or V-shaped pieces equal to the estimated surplus must be cut out, as in fig. 21, and the two edges be welded together after bending. The former mode of treatment is much to be preferred as the greater thickness of the web will add rigidity to the stiffener ; and if the web be cut,



it is morally certain that the joint will be considerably weaker than the original metal. Sometimes it may happen that a tee or angle bar is required to be cranked with the web outwards, as in fig. 22, and then the only course for adoption is to cut out a portion of the web, and to make good the deficiency by the insertion of a piece of plate, as indicated by dotted lines in the figure.

Electrical welding is a process which is extremely useful in special cases, though it cannot be practised on the site of ordinary building operations, and there are not many firms who possess the necessary plant for carrying it on in their works. Prof. Unwin has made some tests of small electrically welded bars of two qualities of steel, and the following are the results as stated by him :—

Table.—Strength of Electrical Welded Steel.

Carbon per cent.	Ratio of Strength (original strength = 100.) Series A.	Series B.
·75	59	68
1·00	70	51
1·00	50	84
1·15	89	113
1·15	75	117
1·25	75	86

These figures do not appear to indicate that varying proportions of carbon exercise any marked influence upon the susceptibility of steel to welding, but in ordinary welding it is found that as the percentage of carbon increases, so does the difficulty of making a weld, and the operation should only be attempted in the case of mild steels. The welding together of steel and cast iron is not difficult, if the steel be of suitable quality ; but such a practice is not adopted for the connexion of structural iron and steel. A somewhat similar process sometimes used consists in the joining together of two cast iron surfaces, and although it does not constitute welding, it may conveniently be referred to in the present connexion. Occasionally it may be found upon examination of a casting, that some part, such as the bracket of a column, has cracked off. The ironfounder may then possibly suggest that a new bracket should be "burnt on." This operation is conducted by remoulding the bracket, and placing the column, previously heated to a high temperature at the desired point, in such a position as to close the mould. The molten metal added to form the new bracket is supposed to raise the temperature of the surface of the column to the melting point, so that the two parts may unite to form a homogeneous casting, but it is by no means certain that this result will follow. A far safer practice to adopt is to have a new bracket cast separately, and to bolt it to the column.

Besides welding there are some ingenious methods of connecting together iron plates by folded, hammered, and soldered joints, but these are not generally applicable to work of the kind we are now considering, although they are used in some minor details of construction involving the employment of very thin plates or sheets of metal. We may, therefore, now pass on to the discussion of rivetted and kindred forms of joints.

OBITUARY.

MR. WILLIAM BUTTERFIELD, F.S.A.—We regret to record the death of Mr. William Butterfield, F.S.A., which took place on February 23 at his residence, No. 42, Bedford-square, W.C. Of Mr. Butterfield's architectural genius and the important part which he took in the architectural work of his day, especially in connexion with the Gothic revival, we have spoken in the first article in this issue, and may therefore confine ourselves in this column to a short summary of facts. Mr. Butterfield was born September 7, 1814, and one of his earliest works was St. Matthias Church, Stoke Newington (1851-3). Of the many other works which he carried out we are able to give the following list. The works mentioned are approximately in chronological order. At Oxford, Balliol College ; sixteen sets of rooms and restoration of the chapel, Merton College ; and Keble College and chapel, 1868-70 (the chapel was illustrated in the *Builder* for January 3, 1885*) ; St. John the Evangelist Church, Broad-court, Russell-street, Covent Garden—re-arrangement (1855) ; Baldersby Church, near Thirsk ; Bookham Church, Surrey ; St. Matthew's parish Church, Ashford (1859) ; St. John the Evangelist, Hammersmith (1859-60), the tower was added in 1881 ; St. Albans, Holborn, for Mr. J. G. Hubbard, afterwards Lord Addington, 1861-2 (illustrated in the *Builder* for May 3, 1884*) ; All Saints, Harrow Weald ; St. Edmund the King, Lombard-street — restoration and repairs ; All Saints, Highgate (1864) ; Christ Church, Albany-street, N.W. — remodelled ; St. Michael, Paternoster Royal, E.C. — restoration ; Chapel, Fulham Palace (1866-67) ; parish church, St. Leonard, Shoreditch — restoration ; St. Thomas, Regent-street—refitted interior ; St. James, Shoreditch—repaired and decorated ; premises for the Society for the Propagation of the Gospel, Duke-street, Westminster (illustrated in the *Builder* for November 4, 1871*) ; St. Augustine's Church and Vicarage, Queen's-gate, S.W. (1871) ; St. Barnabas, Rotherhithe (1872) ; St. Clement's, Eastcheap — re-arrangement of interior ; St. Paul's, Covent-garden — re-arrangement ; St. Mary Brookfield, Dartmouth Park-hill, Highgate (1875) ; St. Mary, Woolnoth, Lombard - street — remodelling of interior (illustrated in the *Builder*, May 28, 1892) ; All Hallows, Bruce-grove, Tottenham—restoration and enlargement ; St. Mary's, Rotherhithe—additions and improvements ; Christ Church, Endell-street, W.C.—restoration (1877) ; St. Michael and All Angels, Woolwich, the nave (1878-79) ; Exeter Grammar School and Chapel. (illustrated in the *Builder* for March 19, 1881*) ; St. Clement's, City-road (illustrated in the *Builder* for February 25, 1882*) ; St. Mary Magdalene, Enfield (1883) ; St. Philip's, Dalston—restoration ; St. Paul's, Bunhill-row—restoration ; St. Mary's, Edmonton (1884) ; Holy Innocents, Kingsbury, Middlesex ; St. Mary's, Warwick—restoration and part rebuilding (1884-91) ; St. John's, Smith-square, Westminster—alteration and repair ; Gordon Boys' Home, Bagshot ; St. Paul's, Rotherhithe — restoration (1892). Amongst other works by Mr. Butterfield are the following :—Parish Church, Hathersage, Derbyshire (the "Morton" of Jane Eyre) ; Heath's Court, Ottery St. Mary ; Chapel, Guards' Depot Barracks, Caterham ; St. Mary Magdalene Church and vicarage, Enfield ; St. Bartholomew Church, Pinchbeck West, Lincoln ; premises, 19, Delahay-street, Westminster ; Christchurch, Hoxton —rearrangement of interior ; St. John the Baptist Parish Church, Barnet — additions ; St. Philip's, Clerkenwell — refitting and improvement ; St. Luke's, Sheen, in the Staffordshire moorlands—completion ; Northington Church, Hants—improvements ; All Saints Church, Priory and Schools, Margaret-street, W. ; St. Augustine's Missionary College, Canterbury—reinstatement, for Mr. Beresford Hope ; Theological College and Chapel, The Close, Salisbury ; St. Mary's, Dover Castle — restoration ; Tottenham Parish Church—restoration ; St. Michael's Hospital, Axbridge ; Melbourne Cathedral ; Perth Cathedral, St. Ninian's, partly completed in 1851, and extended westwards about ten years ago ; St. Augustine Church, Bournemouth ; St. Thomas Church, Leeds ; Ardleigh Church, Essex ; and the chapel with some domestic buildings at Ascot Priory. At Winchester Mr. Butterfield was engaged in the following works :—Some buildings, and restoration of the Chapel, St. Mary's College ; the County Hospital ; and restoration of nave, Chapel of St. Cross (1860), for which he designed also the brass lectern and the altar railing. At Rugby he built the Parish Church, and the chapel, the quadrangle, and other buildings at Rugby School. In 1884 Mr. Butterfield received the Royal Gold Medal of the Royal Institute of British Architects.

MR. JOHN GILES.—We also regret to notice the death, on February 20, of Mr. John Giles, senior partner of the firm of Messrs. Giles, Gough, & Trollope, formerly Messrs. Giles & Gough. In our last issue we printed a description of the County Asylum buildings at Cheddleton for which the firm were awarded the first premium in 1893, when Mr. C. H. Howell acted as professional assessor to the County Lunacy Committee. Of the other more important works carried out by the late Mr. Giles and his partners, we may mention the central hall, offices, and other buildings at (old) Cavendish College, Cambridge, which were opened on October 26, 1876, and closed at the end of Easter term, 1892 ; new asylum buildings at Hendon for the Central London Sick Asylum District Board of Managers, in respect of which they were awarded the first premium by the late C. J. Shoppee, assessor, in 1895 ; workhouse infirmary on the site of Palestine-place and gardens, Bethnal Green, for the St. Matthew Union Guardians, to be completed at a cost of nearly 199,000*l.*, inclusively of 35,500*l.* for the site ; the isolation hospital, Parc Gwyllt Asylum, Bridgend ; extensive additions and alterations, Hereford County and City Asylum at Burghill ; the new chapel, Glamorgan County Asylum ; and an asylum near Talgarth for the Brecon and Radnor Asylum Committee, for which the contract (1859) amounts to about 120,000*l.*

MR. JOHN LANYON.—The death is announced of Mr. John Lanyon, of Belfast, who died at Teneriffe, on February 13. He was the eldest son of the late Sir Charles Lanyon, and a member of the firm of Messrs. Lanyon, Lynn, & Lanyon.

HOME ARTS AND INDUSTRIES ASSOCIATION.—The sixteenth annual exhibition of the work done in the classes of the Home Arts and Industries Association will be held from May 24 to 28 in the Gallery of the Royal Albert Hall. The exhibition will include wood-carving, inlay, metal repoussé, embossed leather, baskets, spinning and weaving, toy-making, and many other applied arts. The percentage on sales will be given to one of the war funds for the wounded.

* These issues are out of print.

* These issues are out of print.

GENERAL BUILDING NEWS.

CATHOLIC CHURCH, HAVERTON HILL, DURHAM.—A new Catholic church is being erected at Haverton Hill from the designs of Messrs, Pugin & Pugin, of London.

ISOLATION HOSPITAL, ENFIELD.—The new isolation hospital at World's End, Enfield, was opened on the 10th ult. The buildings were erected by Messrs. Chessum & Sons, from plans prepared by Mr. Collins, Surveyor to the District Council.

THE BUILDING TRADE IN ABERDEEN.—The lull in the building trade in Aberdeen still continues, and it has been mutually agreed that the standard wages of hewers and trowel masons be reduced to 8d. per hour from March 14. The dispute in the joiner trade is likely to end in an amicable agreement, including a similar reduction of wages, but at date of writing the settlement had not been formally concluded. The number of plans of new houses being approved of by the Town Council is comparatively small, but among public buildings in prospect may be mentioned a block on the surplus ground adjoining the Aberdeen School Board's premises in Union-terrace, from designs by Mr. A. Marshall Mackenzie, A.R.S.A., Aberdeen, the total cost of which will be about 6,000*l*. The greater part of the new premises will have to be let until the requirements of the board extend. The Aberdeen University Club is spoken of as probable tenant. In the same terrace a block for the Scottish Legal Life Assurance Society is to be built, the site being to the south of the Union Club premises, and the total probable cost 10,000*l*. The name of the architect has not yet been made public. Official intimation has now been received from H.M. Office of Works that provision has been made in the Government Estimates for the erection of the new post-office (central) for Aberdeen on an enlarged and improved scale. The building, which will be in the Scottish Baronial style, will occupy a site extending from Crown-street to Dee-street, and the total cost (including site) will be 65,000*l*. In the extra accommodation now arranged room will be found for the department of surveyors for Aberdeen and Dundee districts, and the Post Office authorities will thus be saved the expense of an additional surveyor for Scotland, an appointment which was recently contemplated. The new buildings, which will be of Kemnay granite, will be a distinct addition to the architectural features of the city. The designs are by the Board of Trade architects, Edinburgh.

SCHOOL, AULDHOUSE, N.B.—On the 9th ult. the new school erected by the East Kilbride School Board at Auldhouse was opened. Mr. D. Barclay, Glasgow, was the architect. The school accommodates 100 pupils.

GYMNASIUM, DURHAM GRAMMAR SCHOOL.—The new gymnasium at Durham Grammar School was opened on the 10th ult. The building is 60 ft. long by 30 ft. wide, and is about 25 ft. high. The material used was Dunhouse stone; the floor is of wood blocks. The architect was Mr. W. S. Hicks, of Newcastle-on-Tyne. Messrs. Gradon & Sons, of Durham, were the builders, and the fittings were by Messrs. Stempel, of London.

ADDITIONS TO SOUTHAMPTON HOSPITAL.—H.R.H. Princess Beatrice opened the new Jubilee Wing of the Royal South Hants and Southampton Hospital recently. About the middle of 1894 the Committee considered that it was essential that the existing buildings should be materially improved and altered, and that additional buildings were necessary to carry on the work of the hospital. Since that time the old building has been practically reconstructed. The staircase which faced the doorway and which used to wind up to the operating room has been removed, and a new staircase has been made on the right-hand side of the main corridor, having a well-hole in the centre allowing for the provision of a lift hereafter if found advisable. An old ward has been converted into a board-room, and the secretary's office has been substituted for the previous board-room, a new enclosed balcony being formed for access to the Crabbe wards. In connexion with these wards a scullery has been formed on each floor, fitted as completely as convenience demands. The Bullar wards, on the right hand side, have been converted into wards for children, with new sanitary blocks, ward scullery, &c., and balcony leading from a lobby facing due south, into which beds can be run. Adjoining the Bullar wards on the ground floor are the matron's office and waiting-room. On the first floor, staff bedrooms and bath-rooms have been formed out of the single wards, and the operation-room on the top floor has been formed for the nurses' bedrooms, with new bath-room and lavatory accommodation. From the main administrative building on the basement and ground floors a corridor 8 ft. wide has been formed for a distance of about 80 ft. due south. The basement joins the old corridor leading to the out-patient department, laundry, and isolation block; the ground floor corridor leads to the operation-room block and the new Jubilee wing. The operation-room block consists of operation-room, recovery-room or operation ward, anæsthetic room, and surgeons' lavatory. All these rooms have the walls lined with opaline, while the floors are covered with marble terrazzo. All pipes for hot or cold water are of copper, and fixed on the face of the walls. Electric light is being laid on. In the Jubilee wing the administrative part consists of three floors. The basement contains the heating apparatus, &c., and the ground floor and first floors each have a main staircase, ward for single bed, nurses' room, ward kitchen, and various convenient appurtenances. A lobby connects the administrative part in the ward block, which consists of two stories, with a space under, open on either side for cross ventilation. The ward is arranged to contain twenty-five beds, and attached to it at the north end is a lavatory block with a bath-room, sink-room, &c., and at the south end another sink-room, with balconies and staircase leading to the grounds. The floor of the ward is similar to that in the operation-room block; the walls and ceilings are finished in granite plaster painted and varnished, and the electric lighting has been carried out by Messrs. F. Shalders, of Southampton. The dimensions of the ward give a cubic space of 1,484 ft. per bed. There is a new mortuary, with post-mortem room, &c., and in the south-west corner of the site is the laundry block with apparatus for disinfecting clothes, and a destructor for dealing with dressings, &c. Near this building is the isolation block for the reception of patients suffering from infectious diseases, or any diseases requiring separation from the general wards. It consists of three single wards, with two sets of lavatories, and nurses' duty-room. The total cost of the various work just described amounted to 24,200*l*., exclusive of furniture. The first part of the contract was carried out by Messrs. Stevens & Co., of Northam, and the second part by Messrs. Playfair & Toole, of Southampton. The clerk of the works during the whole of the work up to January, 1899, was Mr. Hibbins, and Mr. Comber has carried on his work since that date. The whole of the works have been designed and carried out under the superintendence of Messrs. Young & Hall, architects, London.

NEW BOARD SCHOOLS, BLACKPOOL.—The plans of Mr. R. B. Mather for new Board schools in Devonshire-road, have been accepted by the Blackpool School Board. The buildings are estimated to cost 7,000*l*.

SMALL-POX HOSPITAL, BARNSLEY.—The new small-pox hospital at Lund-lane, Monk Bretton, built by the Corporation of Barnsley for the isolation and treatment of small-pox cases occurring in Barnsley and the townships round about was opened on the 12th ult. The buildings consist of an administration block with accommodation for ten nurses and eight servants, and one wing with four wards—for fourteen beds, an ordinary ward with six beds, and a special ward with one bed for each sex. In case of necessity the actual hospital accommodation could be quadrupled without any further addition to the administrative block being required. There is a discharge block in which convalescent patients may spend some time after leaving the hospital before finally returning to their friends. The buildings have been erected from designs of the Borough Surveyor, Mr. J. H. Taylor, and have been erected under his supervision and that of his assistant, Mr. Ford.

SANITARY AND ENGINEERING NEWS.

UXBRIDGE.—The Rural District Council have instructed Messrs. Bailey Denton, Son, & Lawford, MM.Inst.C.E., of Westminster, to complete the joint sewerage scheme now in progress for Hillingdon, Cowley, and West Drayton, and to carry out a new combined scheme for Northwood and Ruislip. Both schemes were designed by the late Mr. J. Anstie.

PROPOSED PROMENADE PIER, BRIDLINGTON—The promoters of the new Promenade Pier and Pavilion Company are applying for a Board of Trade order, during this Parliamentary Session. The plans have been approved by the Urban District Council, who at the same time passed plans for the New Grand Hotel, Theatre, &c., on the Beaconsfield site opposite. The Pier will be about 240 lineal yards in length, and approached from the Lower Parade. The toll gates will be set back about 50 ft. from the line of sea wall, and have a gradual inclination of about 2 ft. 6 in. up to the toll houses from the line of Parade. The forebay (which is the outer portion of the pier) will be constructed of steel girders in continuation of those forming the pier itself. The pier will be constructed upon cast-iron piles. These will be screwed into the ground, about 9 ft. in depth, 12 in. in diameter, 1½ in. in thickness of metal, with blades 3 ft. to 4 ft. in diameter, according to the texture of the ground. The bays are to be spanned by steel lattice girders and intermediate girders, resting upon the columns and piles. The columns will have an ornamental cap. The deck will be formed of pitch-pine boards, nailed down upon red deal joists, and protected on each side with ornamental cast-iron railings. There will be two toll-houses, with gates and turnstiles and ornamentally constructed kiosks at the angles of the widening out for the pavilion structures. The Concert Pavilion will have main structural parts placed upon steel girders. It is calculated to hold about 1,500 persons. On three sides of the pavilion will be a gallery, with tiers of seats in front and a promenade behind. External balconies are provided for promenade purposes. The stage is designed for high-class concerts and orchestral performances. A dressing-room will also be provided. The head of the pier will be widened for open air music and other entertainments, with shops and shelters on each side, and a band kiosk in the centre. Provision will be made round three sides of the pier head for embarking and landing small boats. Messrs. Mangnall & Littlewoods, Manchester, are the architects and engineers.

SEWERAGE SCHEME, HALTWHISTLE-ON-TYNE.—The Local Government Board have approved the scheme of sewerage prepared by Mr. Harry W. Taylor, A.M.I.C.E., of Newcastle-on-Tyne, for West End, Haltwhistle-on-Tyne.

FOREIGN.

FRANCE.—A new Hôtel de Ville is in course of erection at Tours, from the plans and under the direction of the eminent architect M. Laloux. It is being erected on a site at the angle of the Rue Nationale and the Boulevard Heurteloup, and will be completed next year.——The French Parliament has under consideration an important scheme for improvements at the port of Cherbourg, at an estimated cost of 27,000,000 fr. It includes the extension westward of the old breakwater. ——The Municipality of Châteaudun is carrying out a new asylum for the aged, at a cost of 300,000 fr.——M. Vaudenbergh, architect, of Lille, has been elected President of the Société des Architectes du Nord for 1900.

GERMANY.—A competition is announced for designs for a large country mansion to be erected in the neighbourhood of Frankfurt on the Oder. It is open to all architects, there is a premium of 400 marks, and the plans have to be sent to the Director (or Adviser) of Horticulture at Frankfurt by May 1.——An open competition is also invited for large public buildings at Mayence, particulars of which may be obtained at the mayor's office in the municipal buildings.——Many large buildings are now being erected in Rhenish Prussia of naturally-formed polygonal columns of basalt obtained from quarries on the Rhine; it is said to be hard and durable, and has the advantage of requiring but very little shaping, the blocks being selected so that the sides of neighbouring stones lie close and fit together.

MISCELLANEOUS.

APPOINTMENT.—The Heston and Isleworth Urban District Council have appointed the Assistant Engineer and Surveyor, Mr. P. G. Parkman, A.M.Inst.C.E., to the position of Engineer and Surveyor; Mr. H. W. Longdin, who held the position of Engineering Assistant, to the position of Deputy Engineer and Surveyor; and Mr. W. H. Jackson to the position of Second Assistant. They are about to appoint a Building Inspector.

CROYDON AND DISTRICT BUILDERS' FEDERATION.—The annual dinner of this Association was held at the "King's Arms Hotel," Croydon, on the 21st ult. There were present, amongst others, Mr. Thos. Gregory (President of the London Master Builders' Association) in the chair, Mr. Chas. Hussey, J.P., Alderman Martin Taylor, and Messrs. T. Costigan (Secretary of the London Master Builders' Association), S. Page, D. W. Barker, D. Waller (President, Vice-President, and Treasurer respectively of the Federation), W. T. Holt, Harris Parks, J. Archer Smith, H. W. Down, and S. Hart. After the loyal and patriotic toasts had been ably dealt with by the Chairman and Messrs. Barker and Costigan, and duly honoured, Mr. H. W. Down proposed the "Croydon and District Builders' Federation." In the course of his remarks, he pointed out the need for increased combination among builders generally in order to deal with the demands which the better organisation of the men enabled them to bring forward from time to time, and he urged upon the few master builders in the town and district who are not members of the Federation the necessity of such a medium for the exchange of ideas and friendly relations and mutual support. Mr. Page, in responding, drew special attention to the variations in the different contracts at present in use, and the great need of a universal form of contract, such as that drawn up by the Institute of Builders. Alderman Martin Taylor, in proposing "The Trade of Croydon," after alluding to the charcoal burning of bygone days, commented on the extreme prosperity of the town during the past few years, and in the course of his remarks said that he considered the building and allied trades the principal industry at present in the borough. Mr. C. Hussey, J.P., also responded to the toast. Mr. D. Waller then proposed "The Chairman," and Mr. Gregory, in responding, said that he hoped the time was not far distant when the whole building trade of the country would wake to the fact that a local federation alone was not sufficient, but that it was necessary for the various local organisations to join together and follow the example of the men in this matter. Other toasts followed.

COURT OF COMMON COUNCIL.—On the 22nd ult., at the Guildhall, the City Corporation held its fortnightly meeting, the Lord Mayor presiding. The Streets Committee submitted letters from the Charing Cross and Strand Electricity Supply Corporation, Limited, on the subject of vesting the City of London Electric Lighting Order, 1899, in a

new company; and recommended that the company be informed, in reply to their communications, that, provided they obtain the sanction of the Board of Trade to the formation of a new company, the corporation will offer no objection to the proposal, on the express understanding that it would in no way prejudice the corporatioon or electric light consumers, and on an undertaking being given under the seal of the company that the expenses in connexion with the formation and the carrying on of such new company should form no part of the purchase money in the event of the Corporation deciding to purchase the undertaking. After a long discussion the recommendation was rejected.—The Town Clerk read a letter from the Clerk to the London County Council relating to the scheme for preserving the house No. 17, Fleet-street (Cardinal Wolsey's Palace), on account of its historic interest, and asking for some modification of the conditions made by the court in connexion with the intended contribution by the Corporation of 2,500*l.* towards the cost thereof. The matter was referred back to a joint committee. —On the recommendations of the Improvements Committee it was agreed to acquire the freehold interests of Nos. 114, 120, and 124, Lower Thames-street for the sum of 30,000*l.*

THE BRADFORD CARTWRIGHT MEMORIAL HALL. —It is stated that in consequence of increases in the prices of the various classes of building material and labour the plans accepted for the Cartwright Memorial Hall in Bradford, which were originally estimated to cost 38,000*l.*, cannot now be erected for less than 25 per cent. more. It will be remembered that Lord Masham gave 40,000*l.* for the erection of the hall in Manningham Park, and the question now being discussed is, will Lord Masham's gift have to be supplemented out of the rates or other plans submitted?—*Leeds Mercury.*

LOWESTOFT MASTER BUILDERS' DINNER.—The first annual dinner of the Lowestoft Master Builders' Association was held at the "Suffolk Hotel" on the 22nd ult. The Mayor (Mr. E. E. Johnson) presided. The loyal toasts having been honoured, the Mayor proposed "Success to the Lowestoft Master Builders' Association," and spoke of the benefits which resulted from tradesmen forming themselves into associations of that kind. Mr. C. R. Cole, the vice-president, in responding, said the Association was really in its infancy at present. The action of the men had caused the masters to form themselves into an association. He did not wish to say anything against the men, but the masters thought their demands were rather exorbitant, and ought to be checked. The Association was amalgamated with the National Federation of Master Builders, which body had, at considerable expense, tested the legality of pickets. They had discovered that it was illegal for pickets to stand in front of a builder's gates trying to prevent his men from going to work. Mr. W. Whitehead, secretary, who also responded, explained the objects of the society. One of the great things which the association wished to bring about was the regulation of the way in which contracts were drawn up. At present a builder simply placed his neck in a halter for the architect to pull the string. The conditions were quite absurd. That was because they, as masters, had been divided. No individual dared to take the stand he would like, because he was at once spotted and overlooked when tenders were invited. These were general charges made by the builders against architects all over the country. Other toasts were "The Visitors," proposed by Mr. Blunderfield, and replied to by Messrs. J. L. M. Barnard and E. Ranson; "Officers of the Association," "The Chairman," "Sub-contractors," "The Corporation," "The Architects."

FIRE AT THE GRAND THEATRE, ISLINGTON.—Islington Grand Theatre was partially destroyed by fire on the 26th ult. The fire originated in the flies, but how, is not clear to the management. The fire had a firm hold of the building before the arrival of the Fire Brigade, under Commander Wells. The stage was speedily a blazing furnace, and tongues of fire were shooting through the roof. No time was wasted by the firemen in getting a plentiful supply of water directed on the burning building. At this time there was a danger that the stables and yard of the London General Omnibus Company and a row of five-story dwelling-houses would be attacked. But so effectively did the firemen go to work that in half an hour any risk of extension beyond the theatre itself was averted. For some time little headway was made in subduing the flames inside the building. The boxes, the stalls, and the first balcony fell victims in turn, and it is to the credit of the firemen that they prevented the front of the building being attacked. Besides the great damage done to the building itself, many valuable mountings were destroyed. The official report of the fire, prepared by Commander Wells, states: "Damage—Theatre, about 140 ft. by 130 ft.; stage, scenery, and back part of building (used as scene and property store, carpenters' and paint shops) burnt out and part of roof destroyed; rest of auditorium, refreshment-rooms, &c., and the contents severely damaged by fire, water, and breakage."

REREDOS, BULWELL CHURCH, NOTTS.—The new reredos which has been erected in the parish church, Bulwell, in memory of the late Mr. Thomas Hardy, of Bulwell Hall, was dedicated by the Lord Bishop of Southwell on the 26th ult. The memorial is executed in alabaster in the Gothic style. The higher central portion contains a representation of the Crucifixion, boldly sculptured in white alabaster, within a traceried, crocketted, and ogee-shaped arch. On each side of the central arch are traceried niches, one containing a figure of St. Paul, and the other St. Peter. The arches are divided by moulded buttresses, terminated with carved pinnacles. The wall on each side of the reredos is covered with polished alabaster low panelling, arched and traceried, and surrounded with carved cornices. On the south wall is an alabaster tablet bearing an inscription. The work has been executed by Messrs. Farmer & Brindley, of London, from the design and under the direction of Messrs. Heazell & Son, architects, Nottingham.

CHURCH BUILDING SOCIETY.—The Incorporated Society for Promoting the Enlargement, Building, and Repairing of Churches and Chapels held its monthly meeting on the 15th ult. at the Society's House, Dean's-yard, the Rev. Canon C. F. Norman in the chair. Grants of money were made in aid of the following objects, viz.:—Building new churches at Grantchester St. Mark, near Cambridge, 75*l.*; and South Margate, St. Augustine, Kent, 150*l.*; rebuilding the nave of the church of St. Mary the Virgin, Charing Cross-road, Soho, London, 50*l.*; and towards enlarging or otherwise improving the accommodation in the churches at Bawtry St. Nicholas, Yorks, 40*l.*; and Marsden St. Bartholomew, near Hudderfield, 40*l.* Grants were also made from the Mission Buildings Fund towards building mission churches at Chavey Down, St. Martin, near Bracknell, Berks, 15*l.*; Dundraw, near Carlisle, 15*l.*; Swallow Nest, near Sheffield, 20*l.*; and Walthamstow, St. Paul, Essex, 40*l.* The following grants were also paid for works completed:—South Tottenham, St. Peter, Middlesex, 500*l.*, on account of a grant of 1,000*l.*; Ipswich, St. John the Baptist, 80*l.*, on account of a grant of 100*l.*; South Tottenham, St. Alban, Middlesex, 15*l.*; Langley, the Good Shepherd, near Birmingham, 30*l.*; and Truro, St. Andrew, 20*l.* In addition to this the sum of 166*l.* was paid towards the repairs of twelve churches. The grants voted towards mission buildings at this meeting have nearly exhausted the funds at the disposal of the committee; liberal contributions are earnestly invited, both to the general and to the Mission Buildings Fund, to enable the committee to vote substantial grants and to continue the valuable work which this society has so successfully carried on during the past eighty-two years. The annual general court of the Society will be held on Thursday, May 17, at the Church House, at 3 p.m., when the chair will be taken by the Bishop of London.

WORKMEN'S COMPENSATION.—On the 15th ult. Mr. A. H. Ruegg, Q.C., lectured before the members of the Solicitors' Managing Clerks' Association on the subject of workmen's compensation. Mr. Ruegg said that in every civilised State a citizen had a right to personal security, and it was accepted as a duty that we should so act and so use our rights that no injury should be inflicted upon another. This became a common law obligation until the industries of the country assumed gigantic proportions. It was not until 1837 that the doctrine of common employment was raised in a case relating to a butcher's boy. The learned gentleman went on to speak of the many erratic decisions by County Court juries when dealing with cases under the Act of 1880. He had seen 125*l.* given for injury to a little finger, while 25*l.* had been awarded for the loss of a right leg. He suggested that it would serve a useful purpose if a County Court Judge were given power to invest money awarded as damages, or to pay it in instalments—a system which found favour in both Germany and Austria. Dealing with the Compensation Act passed by the present Government, Mr. Ruegg remarked that it was based on the German system, although by no means identical with it. The German law grouped the different trades, making them a sort of mutual insurance company. It was unpalatable to many employers, and so far as he was aware it was not agitated for by workmen or trades-unions. As a matter of fact, the provisions were too novel to this country to be applied to trades beyond those regarded as dangerous. Dealing with the anomalies of the Act, the lecturer pointed out that if a carman fell off his load in the factory yard, and was killed, his dependents would be entitled to compensation; yet if he was killed in a similar way some distance off, no compensation could be recovered. Again, before a workman engaged on a building could recover the structure must be 30 ft. high. He was of opinion that, although the Act had been attacked—perhaps justly as to the absurdity of some of its provisions—yet the complaint that it would occasion much litigation was not deserved. Up to the present there had been one hundred appeals, and the number was not excessive considering that it was a new Act, founded upon untried principles, and that many industries were necessarily on the border line between those included in the Act and those excluded. In Germany the appeals in the High Court averaged 10,000 a year. He was convinced that sooner or later the Act would be extended, so as to include all industries. However, the principles the Act embodied ought to have a fair trial, and let them all hope that it would be productive of nothing but good to the workmen of the country.

HULL MASTER BUILDERS' ASSOCIATION.—The annual dinner of the Hull Master Builders' Association was held at the George Hotel on the 15th ult., the President, Mr. James Townsley, in the chair. About 130 gentlemen sat down, amongst those present being Mr. W. Nicholson (Leeds, President of the Yorkshire Federation), Mr. C. Hebblewhite (vice-president), Mr. F. Southern (hon. treasurer), and Mr. Bray (ex-president). The loyal and patriotic toasts having been honoured, Mr. W. G. Bray proposed the "Mayor and Corporation," Councillors Scott and Panton replying. Mr. G. H. Walters then proposed "The National Federation of Building Trade Employers." Having impressed upon all builders the great desirability of first federating in their own towns, the speaker said that there was no doubt that the National Association had been somewhat behind time, but that was the fault, not of the Association in a strict sense, but of the representatives who had gone up to the Association to transact the business. The wages paid by the master builders of the country were more than what were paid by any other class of masters. There were 48,000 firms in the country, and in two years they had federated 12,000 in the National Association. If the sum of a farthing in the £ on all wages paid in the building trade was put aside, it would produce the annual sum of 62,000*l.*, so they would see they were a somewhat important body in the nation. The master builders of England were not federated together to smash unions, nor to reduce wages. He had attended 500 meetings during the past twelve months, and he had never heard a builder say that he wanted to reduce wages. What they did want to do was to get the British working man to realise he ought to give a fair return for the wages received. They also wanted to produce more efficient men. He was sorry to say it, but it was a fact patent to all builders, that the British working-man had very much deteriorated during the past quarter of a century. They seemed to be resting on their unions as a sort of crutch, and to say it did not matter whether they made themselves proficient or not, as the union would compel the employers to pay them all alike. That ought not to be so. Masters should see to it that they took more apprentices and made them efficient. The Federation were impressing upon the builders of England that they should engage efficient foremen, who should distinctly understand their duty was to teach the lads their trade to the very best of their ability, and produce mechanics worthy of the name and of the country. —Councillor Nicholson, in responding, said that the past year had been one continual succession of labour troubles, and he very much felt for the position of the Hull master builders. During the past three or four years they had experienced a shortage of workmen, and the antidote to that was for every master to bring up a certain number of apprentices, and to see they were properly and legally bound. The Federation had a strong idea that municipal corporations ought not to become employers of labour so far as building was concerned.—The next item on the programme was a presentation to Mr. Bray in recognition of the services rendered by him during his year of office as President. The presentation took the form of a diamond ring for Mr. Bray and a bracelet for Mrs. Bray. Councillor Panton and Mr. Walters made the presentation. Mr. Bray having thanked them for the gift, Mr. O. A. Ellis gave the "Hull Master Builders' Association." The President replied. The Hull Association, he said, was the largest in England, but numbers did not always constitute strength, and he did not want any of them to rely upon the register as being their strength. Their strength would come from unity of purpose, and if they had not that unity there was not the least doubt their twelve months' effort would be a failure. They wanted to be strong in good principles, and strong in their desire for justice, not to themselves only, but to others. They wanted to see that they gave the public an equivalent for every sovereign they took from them, so that the public would not have the erroneous idea they existed to extort from them something that was unjust and unrighteous.—The toast of the architects was honoured on the proposition of Mr. V. Knowles, Mr. P. Gaskill responding.

LEGAL.

CASES UNDER THE WORKMEN'S COMPENSATION ACT.

THE cases of Cass *v.* Butler and Crowther *v.* Butler came before the Court of Appeal, composed of Lords Justices A. L. Smith, Collins, and Romer, on the 24th ult., on the appeal of the respondent, Mr. Butler, a master painter, from the award of the County Court judge of Leeds, granting the applicants in both cases, the widows of two men killed, compensation under the Workmen's Compensation Act, 1897.

Mr. Ruegg, Q.C., who appeared in support of the appeal, said that precisely the same point was involved in both cases, which arose out of the same accident. Mr. Butler appealed from the award of the County Court Judge on two grounds, first that he

(Butler) was not the "undertaker" of the building on which the accident arose, and secondly that the work which was being done at the time of the accident was neither "construction" nor "repair" of a building within the meaning of the Act. No evidence was gone into at the trial in the second case, as it was admitted that the one case governed the other, and that if the award was rightly made in the case of Cass *v.* Butler it governed the other case. The respondent's case was that the award was wrongly made in both cases.

It appeared that Cass and Crowther were painters, and at the time of the accident were painting a new building which was being erected for the Leeds Corporation by a builder named Isaac Gould, and which was to be used as an electric light station by the Corporation. Mr. Butler, the respondent in the arbitration, was a master painter, and had entered into a sub-contract to paint the building. At the time the accident happened Cass and Crowther were engaged in painting some iron girders in the roof of the building which had never been painted before, using the scaffolding which, it was said, belonged to the contractor Gould. Whilst the men were painting the girders, one of two planks on which they stood broke, the consequence being that they fell to the ground and were killed. The learned counsel contended that Butler, being a sub-contractor, using the contractor's scaffolding, could not be held to come within the definition of an "undertaker" within the meaning of the Act. Neither could the painting of a building be held to be "construction" of a building within the meaning of the statute. He submitted that no distinction could be drawn between the painting of an old building and the painting of a new building. It could not be said that painting a building was "construction" of a building. It was something quite distinct from construction.

Lord Justice Smith: I suppose the building was over 30 ft. high at the date of the accident?

Mr. Ruegg replied that he thought it was. There was no evidence as to that.

Mr. Temple Franks, for the respondents, submitted that there was nothing in the Act to show that a sub-contractor could not be an "undertaker." In Mason *v.* A. R. Dean, Limited (reported in the *Builder* of February 24), it was decided that there could be several undertakers in respect of the construction of one building. If that were so, a sub-contractor could be an undertaker, and whether he was so or not was a question of fact in each case. The County Court Judge having found that Butler was an undertaker, no appeal lay from his finding. Section 4 of the Act merely provided a remedy against the contractor in addition to that against the sub-contractor. The object of Section 4 was that if the sub-contractor was a man of straw, then the applicant under the Act could proceed against the contractor.

At the conclusion of the arguments of counsel, Lord Justice Smith, in giving judgment, said he thought the learned County Court Judge was wrong. It was not necessary to determine the point as to whether the painting of the building in question was "construction" within the meaning of Section 7 of the Act, because the other point taken was sufficient to decide the case. It was said that Butler was not an "undertaker" within the Act, and that Gould was the undertaker, and that if any one was liable, Gould was liable. The question was whether a sub-contractor was an "undertaker" within the Act. It was said that the respondent had the option of suing either the contractor or the sub-contractor, as they were both "undertakers." His lordship, however, did not think that that contention was correct. Section 7, Sub-section 2, of the Act defined "undertakers," so far as material, as meaning persons undertaking the construction, repair, or demolition of a building. In the present case Gould had undertaken the construction of the building in question. In the case of Mason *v.* A. R. Dean, Limited, a firm named Messrs. Moore & Sons had contracted with the building owner for the construction of a theatre, but under powers reserved in Messrs. Moore & Sons' contract, the building owner entered into a contract with A. R. Dean, Limited, for the latter to do the decoration work. The deceased man was in the employment of the latter firm, and he was killed while at work on the theatre. This Court held that as A. R. Dean, Limited, had entered into a contract direct with the building owner to construct part of the building they were "undertakers" within the Act, and liable as such. That was an entirely different case from the present, where a contractor had agreed with the building owner to construct the whole building, and had let out part to a sub-contractor. Section 4 of the Act was strong to show that a sub-contractor was not an "undertaker" within the Act.

Lords Justices Collins and Romer concurred, and the appeal was accordingly allowed.

THE case of Illingworth *v.* Warmsley came before the Court of Appeal, composed of Lords Justices A. L. Smith, Collins, and Romer, on the 24th ult., on the appeal of the respondent from the decision of the County Court Judge of Blackpool in a claim for arbitration under the Workmen's Compensation Act, 1897.

Mr. Crawford, who appeared in support of the appeal, said that the applicant was a foreman joiner in the employment of Mr. Warmsley, a builder, near Blackpool. The accident in respect of which the claim for arbitration was made happened during the course of some work which was going on when Illingworth seriously damaged one of his hands with a saw, which caused permanent incapacity to a certain extent, the movement of certain fingers of Illingworth's hand being interfered with permanently. The respondent admitted his liability in the sense that when notice was sent to him of the accident which happened on December 20, 1898, he paid Illingworth compensation from that date up to May 27 following, at the rate of half his wages. Illingworth's wages were *1l.* 13s. 8d. a week, and Mr. Warmsley paid the applicant 16s. 10d. a week from the happening of the accident down to May 27, 1899. In addition to this an insurance company paid Illingworth 9s. 6d. a week. On September 19 Illingworth commenced proceedings under the Act in the Blackpool County Court, asking for 100*l.* compensation. The judge, however, did not award the applicant a fixed sum, but compensation at the rate of 15s. a week to be paid from October 25, 1899, the date on which the application was heard. He also ordered that the respondent should pay the applicant a lump sum of 9*l.* 13s. 6d. The respondent's first point of complaint was that the learned County Court Judge had no jurisdiction to hear the application, inasmuch as a period of more than six months had elapsed from the time when the accident took place.

Mr. Mellor, for the applicant, said that that point was never taken in the Court below.

Mr. Crawford said that the point was taken.

Lord Justice Smith remarked that the Court had heard arguments on that point before, but had not given judgment on it yet.

Mr. Mellor said that the accident happened on December 20, 1898, and down to May 27 the respondent paid the applicant 15s. a week.

Mr. Crawford: No, he paid the applicant 16s. 10d. a week—50 per cent. of his wages.

Mr. Mellor: Well, when the man came back to work he was paid his wages by the employer at the rate of 15s. a week until the date of the application for arbitration. In addition to that the insurance company paid the applicant 9s. 6d. a week. During the whole of this time negotiations were going on between the applicant's solicitor and the insurance company.

Lord Justice Collins said that the insurance company was only another name for the master.

Mr. Mellor agreed and said that when these negotiations fell through, the request for arbitration was filed, which was on September 19, 1899. In answer to that, on behalf of the respondent, statutory notice was served on the applicant's solicitor admitting the respondent's liability. Nothing appeared on the Judge's notes of the point about the application for arbitration not being made until more than six months after the happening of the accident.

Mr. Crawford submitted that he was entitled to raise the point now, first, because he was instructed that it was raised in the Court below, and, secondly, because he had given his learned friend notice of it.

Mr. Mellor said that he only received the notice that morning.

Lord Justice Smith: Do you deny that this point was taken in the Court below?

Mr. Mellor: It does not appear on the learned Judge's notes, but if the solicitor says it was raised that is enough.

Mr. Crawford said he did not know whether it was open to him to argue the point, seeing that it had been argued before.

Lord Justice Smith said that the point had been argued in a case which the Court had sent back to the County Court Judge. His lordship thought that the present case, with others raising the same point, had better stand over till the first case was argued. The Court would name a day when the case could be put in the paper. If it turned out that the notice of the accident was not notice of a claim as required by the Act, then the applicants in all these cases were out of time.

CASE UNDER THE LONDON BUILDING ACT, 1894:

CONSTRUCTION OF CHIMNEYS FROM COPPERS IN REAR OF WORKMEN'S DWELLINGS.

AT Worship-street Police-court, on the 22nd ult., Mr. H. J. Cohen appeared before Mr. A. R. Cluer, magistrate, to answer a summons taken out by Mr. A. Payne, District Surveyor of East Hackney and South and North Bow.

Mr. H. J. Cohen, 1, Finsbury-circus, E.C., the defendant, who is a builder and owner, had constructed coppers in the rear of 57, Lamprell-street, North Bow, a two-story dwelling-house in flats for the working classes, the upper and lower stories being separate tenements, with chimneys formed of drain-pipes carried up past the balcony of the upper flat and to about 6 in. above the roof. The District Surveyor required them to be carried up in brickwork at least 4 in. thick throughout to a height of not less than 3 ft. above the roof, as required by Section 64 (12). A notice of irregularity was served in September last.—After hearing the evidence, the magistrate made an order that the chimneys were to be carried up in 4-in. brickwork to a height of 3 ft. above the roof, in accordance with the section, in fourteen days, and defendant to pay 12s. costs. The same defendant was also summoned for constructing similar pipe chimneys in rear of Nos. 50 and 61, Lamprell-street, in which cases the pipe-flues were taken in front of the corner of the window in each story. The magistrate made an order to amend, with 12s. costs in each case.

MEETINGS.

FRIDAY, MARCH 2.

Institution of Junior Engineers.—Paper on "Electrolytic Zinc as a Protective Metallic Coating for Iron and Steel," by Mr. William Paddon. 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. H. D. Searles Wood on "Building Materials." 8 p.m.

SATURDAY, MARCH 3.

Royal Institution.—The Right Hon. Lord Rayleigh on "Polarised Light." I. 3 p.m.

Institution of Junior Engineers.—Visit to Messrs. Maudslay, Sons, & Field's Belleville Boiler Works, East Greenwich. 3 p.m.

British Institute of Certified Carpenters.—Visit, at 3.30 p.m., to Royal Hospital, Chelsea. Meeting at Carpenters' Hall at 6 p.m., when Mr. Henry Adams will read a paper on "Some Comparisons of Graphic Statics Applied to Roofs."

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Express Dairy Company's Farm, College Farm, Finchley. 3 p.m.

Sanitary Inspectors' Association.—Sixteenth Annual Dinner, Venetian Salon, Holborn Restaurant. 6 p.m.

MONDAY, MARCH 5.

Royal Institute of British Architects.—(1) Special general meeting to elect, as Royal Gold Medallist for the current year, Professor the Commendatore Rodolfo Lanciani, of Rome. (2) General meeting (business and special) for the election of Candidates for Membership. (3) A further special general meeting, when the adoption of the following recommendations of the Council will be moved by the Chairman:—1. That in By-law 25 the words "thirty-six" in the first line be altered to "thirty-eight," and that the word "two" in the second line of section (*a*) be altered to "four." 2. That in By-law 29 the second sentence be altered so as to read: "Any Associate shall be eligible to serve as an Associate-Member of Council." 3. That in By-law 30 the word "three" in the seventh line be altered to "six;" and further that the words "but the names of members of the existing Council shall be distinguished by an asterisk" be omitted from the same By-law. 8 p.m.

Society of Arts (Cantor Lectures.)—Mr. E. Sanger Shepherd on "Photography of Colour." I. 8 p.m.

Society of Engineers.—Mr. R. F. Grantham on "The Closing of Breaches in Sea and River Embankments." 7.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. Percival Gordon Smith on "Sanitary Building Construction and Planning." 8 p.m.

Liverpool Architectural Society.—Mr. A. Saxon Snell on "Public Baths and Washhouses." 6 p.m.

Leeds and Yorkshire Architectural Society.—Exhibition of Institute Drawings. Nomination of officers. 6.30 p.m.

TUESDAY, MARCH 6.

Institution of Civil Engineers.—(1) Paper to be further discussed: "Corrosion of Marine Boilers," by Mr. John Dewrance. (2) Time permitting, paper to be read with a view to discussion: "A Short History of the Engineering Works of the Suez Canal," by Sir Charles Hartley. 8 p.m.

Architectural Association of Ireland.—Mr. Thomas Drew, R.H.A., on "The Comacine Masters and a record of a Comacine Architect in Dublin." 8 p.m.

WEDNESDAY, MARCH 7.

British Archæological Association.—Rev. H. J. Dukinfield Astley, M.A., on "Two Norfolk Churches." 8 p.m.

St. Paul's Ecclesiological Society.—Mr. J. T. Micklethwaite, F.S.A., on "Westminster Abbey," illustrated by lantern views. 7.30 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers).—(1) Inspection at the East London Waterworks, Lea Bridge, Clapton, 3 p.m. (2) Dr. G. Reid on "Sanitary Appliances." 8 p.m.

Edinburgh Architectural Association.—Mr. J. A. R. Inglis on "Colour in Architecture"—illustrated. 8 p.m.

Northern Architectural Association.—A discussion on questions of professional practice will be opened by Mr. J. Walton Taylor. 7.30 p.m.

THURSDAY, MARCH 8.

Royal Institution.—Dr. Charles Waldstein on "Recent Excavations at the Argive Heræum (in Greece)"—illustrated by lantern slides. II. 3 p.m.

Carpenters' Hall, London Wall (Free Lectures on Matters connected with Building).—Mr. William Henman on "The Modern Hospital." 8 p.m.

Society for the Encouragement of the Fine Arts.—Mr. E. Doran Webb, F.S.A., on "Salisbury Cathedral and How it Came to be Built"—with limelight illustrations. 8 p.m.

Institution of Electrical Engineers.—Dr. H. Lewis Jones, M.D., on "The Applications of Electricity in Medical and Surgical Practice." 8 p.m.

FRIDAY, MARCH 9.

Architectural Association.—Mr. C. E. Bateman on "Small Houses." 7.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. J. Wright Clarke on "Details of Plumbers' Work. 8 p.m.

Royal Institution.—Professor F. Clowes on "Bacteri and Sewage." 9 p.m.

Glasgow and West of Scotland Technical College (Architectural Craftsmen's Society).—Mr. J. Fairweather on "Points in Practice." 8 p.m.

Institution of Civil Engineers (Students' Meeting).—Messrs. John Duncan, W. A. Wales, and G. J. Day on "The Distribution of Stress in the Walls of a Thick Cylinder." 8 p.m.

SATURDAY, MARCH 10.

Royal Institution.—Right Hon. Lord Rayleigh on "Polarised Light." 11. 3 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at Beddington Sewage Farm. 3 p.m.

Institution of Junior Engineers—Conversazione at the Westminster Palace Hotel. Reception at 7 p.m. by the President, the Hon. Charles A. Parsons, F.R.S., and Mrs. Parsons, the Chairman, Mr. Basil H. Joy, and Miss Joy.

Dundee Institute of Architecture.—Visit to Mather's Hotel and surrounding buildings, and Park U.P. Church. 2 p.m.

Edinburgh Architectural Association.—Visit to Prestonpans.

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

22,559.—JOINTS AND COUPLINGS FOR SANITARY PIPES, &c.: *T. W. Twyford.*—For an abutment a sunken collar or ring is fitted on to the earthenware portion of the joint, and an inner ring, made of material which will not be acted upon by sewer gas, is used to protect the sealing washers or rings. In one adaptation, for two lengths of earthenware pipes a gun-metal ring, placed within an annular channel, provides an abutment collar for the union ring's flanged end. In the case of couplings for metal and earthenware pipes, the metal pipe's end is flanged to fit the diameter of a loose flanged collar which is slipped over the earthenware pipe, or the sealing-ring may be fitted between the face of the latter pipe and the end flanges of the metal pipe, instead of being socketted into the earthenware pipe's end.

22,591.—STOPPING DRAIN PIPES FOR TESTING PURPOSES: *F. T. Farrer & W. W. Brown.*—To a flanged pipe is secured a cylindrical india-rubber bag whose other end is closed, and which is placed within a canvas cover whose diameter corresponds with that of the pipe which is to be stopped; when the stopper has been inserted into the drain, the bag is inflated with an air-pump.

22,601.—ELECTRICAL ARC LAMPS: *H. C. Spinney.*—At a fixed distance below the body of the lamp is supported a plate, by contact with which the clutch for the upper carbon is opened; on the plate are some supports which carry the ordinary cap of the small globe enclosing the arc, and also allow the cap to adjust itself to globes of different sizes whilst retaining the cap when the globe is removed.

22,614.—TIPPING APPARATUS: *G. C. Fowler.*—On a shaft is mounted a cylindrically shaped frame, which has two sets of rails laid in parallel planes but upon opposite sides of the axis. When a loaded truck has been impelled into the frame, it is held therein by plates which engage with corresponding plates upon the truck, then, upon release of the break-band, the frame tilts through 180 deg., and so brings the truck into place for discharge of its contents into a shoot. A second truck is then run in, and the operation repeated, so that the first truck (having been emptied) returns to its original position as the second is being tilted.

22,627. DOORS AND SHUTTERS FOR PREVENTING THE SPREAD OF FIRE, &C.: *F. H. McGrouther, J. Clark, and W. Robertson.*—The loose metal panels of the door (as specified in No. 102 of 1898) have inclined slots for the passage of distance-pieces or studs, and are to be forced outwards, by cams and handles, for engagement with a grooved frame. By another arrangement the door, when it is closed, impinges upon the side of a pivotted channel-bar of the frame, and when it is opened swings the channel-bar outwards again, or the metal plates and bars may be arranged so as to work diagonalwise on pins in recesses cut in the frame, and to enter recesses in the door's edges.

22,663.—MOULDING PIPES: *H. F. & A. Coulthurst.*—The table of a machine after the kind specified in No. 16 of 1896, is locked and balanced by the following means:—Keyways that slide upon keys or feathers of guide-rods are fitted to the table and to a pair of loose collars joined together with a rod in order that they may be turned with one handle, and at one time. When they are lifted above the keys, the table is pressed against the die by the cam-shaped lower faces of the collars; when the socket has been fashioned, the collars are turned to bring the keyways opposite the feathers, whereupon the table freely descends, as the pipe is made; weights fastened to slotted spokes of pulleys that carry weighted straps which balance the table, serve to balance the weight of the pipe, their resistance against the table's fall increasing until the slotted spokes attain a horizontal position.

22,700.—CONDUITS AND TUBES: *H. Edmunds.*—The tubes or conduits, for water supply, electrical conductors, and other purposes, are made of Portland or other cement and lined with bitumen or a similar composition, the bitumen lining may be run, when liquid, into the tube, or the cement may be made around a bitumen lining.

22,710.—DRAWING-BOARDS AND T-SQUARES: *W. F. Stanley and R. W. Fieldwick.*—Into a groove made along the drawing-board's working-edge is fitted a steel or other bar, whose edge, machined true, slightly projects, screws or a stud and screw retain the bar in position, allowance being made for expansion, and short strips of rubber are laid under each end; a bar, of gun-metal or brass, is let into the working-edge of the T-square, and bears against the bar which is fixed on to the board.

22,740.—T-SQUARES, &C.: *B. Hibbert.*—To the guide, which carries a straight-edge, is hinged a pair of arms joined by links to a nut which slides upon the guide; the instrument will serve for a T-square by means of fixed and adjustable stops upon the guide, which may hold the two arms in a straight line. The stops may also fasten the two arms at any desired angle; two hinged pieces are fastened with drawing-pins to the board, and have guiding points attached to them.

22,791.—A GUARD FOR SURFACING OR HAND-FEED PLANING MACHINES: *J. Kershaw.*—Upon the end of a radial arm that turns on an axis is mounted a guard above the revolving cutter, the wood automatically raising it by means of an inclined piece upon the guard's front, the guard's breadth is rendered adjustable by forming it in two parts, one of which slides within the other; for chamfering or rabbetting purposes the radial arm is displaced length-wise upon the axis.

22,792. — ADJUSTABLE FEED-MECHANISM FOR CIRCULAR SAWS: *J. Kershaw.*—To the bracket which carries the driving shaft is joined, with two parallel links, another bracket in which the shaft of the feed-rollers revolves, whereby the latter receives a parallel motion to and from the saw, a plate with a slot and a set-screw are used for altering the shaft's angle.

22,809.—A BREAK FOR CRANES, WINCHES, &C.: *T. Smart.*—A ratchet upon the power shaft engages with pawls that are held down with springs upon a disc which is surrounded by a band-break, the break having lugs through which passes a screw; as the load is raised the break comes into action and the pawls pass over the ratchet; when the load is to be lowered the screw is turned in order that the shaft, together with the disc, may revolve within the band; for the ratchet and pawls may be substituted a clutch upon the shaft for engagement with the disc during the course of lowering (but not raising) the load.

22,845.—FASTENINGS FOR WINDOWS, &C.: *A. T. B. Markham.*—To the sash bar is affixed a casing in which a bolt slides. The bolt, when shot, is retained in that position by a pivotted tumbler that falls behind it, and when the bolt is drawn back the tumbler drops into a notch cut in the bolt.

22,878.—CHIMNEY TOPS: *R. Smith.*—A double tapering jacket, open at both its top and bottom, and fitted with three-sided inlets, encloses a straight pipe having a cap upon its top, and outlets on its sides beneath the cap. On the pipe, below the jacket, is fitted a deflecting collar.

22,888. — A FIREPROOF AND ANTI-FOULING PAINT.—*D. F. Lucas.*—The paint, for coating roofs and similar structures, is composed of an admixture of resin, oil, coal tar, benzine, or kerosene, chloride of sodium, ochre, sulphate of iron, carbonate of soda, litharge, and water. If an anti-fouling compound is needed, a further addition of Paris green and arsenious acid is made.

22,914.—A SAFETY APPLIANCE FOR WORKMEN'S USE: *A. Miller.*—The contrivance is devised to prevent persons from falling when at work upon roofs, or in cleaning windows, &c. It consists of a sling to be secured to a hook that slides along a rail fixed to the roof with standards, or to the room floor, and furnished with a loop that passes round the man's back and beneath his arms, together with binders for his chest.

22,954.—PREVENTION AND CONSUMPTION OF SMOKE: *W. R. Mills.*—To the front of a steam-boiler or other furnace, and forming the fire-door, is fastened a hollow casing wherein is mounted a cylinder-shaped damper provided with a set of air-ducts, steam-jets being delivered above the fire-door into the furnace. In the upper part of the casing is a hollow space, at the sides are passages, open at the bottom, that extend downwards; a sliding grid admits air into the hollow space and through the side passages in order to keep the casing cool; air is also admitted by ports into the ducts and spaces of the damper.

22,980.—ARCHES FOR FLOORS, CEILINGS, &C.: *M. Koenen.*—Flat arches are built of masonry or concrete, iron bars (for resistance against tensile stress) being embedded in their lower portions and hooked over the upper flanges of the girders, or joined with hooked tie-rods to the walls or girders. The sides of the arch's flat part may be sloped, so as to wedge between the inclined faces of the haunches, and by one modification the flat middle part of the arch will rest upon haunches that are joined to the girders with tie-bars, which form cantilevers. In the case of two arches that abut, the one against the other, the tie-bars may be embedded in the concrete, or carried over the girders, or joined together with bars built within the brickwork.

23,091.—STAYS FOR CASEMENTS: *T. Barnes.*—The device is intended to prevent the stay from turning round and from moving lengthwise; the latter motion is frustrated by means of a set-screw, the former by the toothed face of the bolt's head which engages with teeth upon the bracket, the teeth being driven out of gear—when the screw is loosened—by a spiral spring.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

February 8.—By DREW & SON (at Richmond).
Norbiton, Surrey.—48 to 61, Cambridge-rd., area 1 r. 38 p., f., r. 159*l.* 18s. £910
February 13.—By W. R. NICHOLAS & Co. (at Reading).
Bradfield, Berks.—Cripps Farm, 37½ a., f. 1,360
February 15.—By BLAKE & CARPENTER, in conjunction with STANLEY HICKS (at Croydon).
Croydon.—Park-lane, Beech House and 2 r. 23 p., f. 3,030
Beech House-rd., &c., 66 plots of land, f. (in lots) 16,850
By COOLEY & SON (at Donington).
Donington, Lincs.—Wilkes Farm, 59 a. 2 r. 33 p., f., r. 90*l.* 2,350
By Messrs. SPELMAN (at Bungay).
Ditchingham, Norfolk.—The Chestnuts and 3 a. 0 r. 26 p., f. and c. 750
A freehold house and a cottage 270
Three freehold meadows, 4 a. 0 r. 35 p. 355
Freehold coach-houses, stabling, and 2r. 38p. .. 100
Bungay, Suffolk.—The Subscription Reading Rooms, u.t. 900 years, g.r. nil 155
By J. M. LEEDER & SON (at Swansea).
Oystermouth, Glamorgan.—Fernhill and 1 a. 0 r. 32 p., u.t. 57 yrs., g.r. 15*l.* 2,250
Swansea, Glamorgan.—22, Singleton-st., u.t. 40 yrs., g.r. 1*l.* 19s. 6d. 255
By J. U. FELLOWS (at Birmingham).
Sutton Coldfield, Warwick.—Langley Mill Farm, 150 a. 0 r. 17 p., f. 7,300
February 17.—By A. W. COCK (at Torrington).
Winkleigh, Devon.—Venton Farm, 87 a 3 r. 17 p., f. 980
Roborough, Devon.—Beeres Farm, 12 a. 3 r. 33 p., f. 810
February 19.—By MOORE & TEMPLE.
Brixton.—1, 3, 5, 13 to 21 (odd), Brading-rd., u.t. 81½ yrs., g.r. 55*l.*, r. 242*l.* (in lots) 2,155
By E. W. RICHARDSON & SON.
Tottenham.—22 to 28 (even), Avondale-rd., u.t. 87 yrs., g.r. 18*l.*, r. 114*l.* 8s. 710
Bushey, Herts.—High-st., a corner shop and house; also 2, 3, and 4, Cow-lane, f., r. 40*l.* ... 850
February 20.—By ALFRED RICHARDS.
Lower Edmonton.—Hertford-rd., enclosures of land, about 21 a., f. 6,500
Enfield.—Lincoln-rd., &c., freehold building land, 3 a. 0 r. 18 p. 1,670
By GARRETT, WHITE, & POLAND.
Shepherd's Bush.—25, Coverdale-rd., f. 950
By PERCY MATTHEWS & MATTHEWS.
Tottenham.—10 to 40 (even), Montague-rd., u.t. 69 yrs., g.r. 61*l.* 2,180

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard.

PRICES CURRENT OF MATERIALS:

WOOD.*

Per Petersburg standard hundred.

	£	s.	d.	£	s.	d.
White Sea: first yellow deals	18	0	0	23	10	0
Second do.	16	0	0	18	0	0
Third do.	13	10	0	15	0	0
Battens, 40s., 30s., and 15s. less respectively.						
Petersburg: first yellow deals	15	0	0	17	10	0
Second do.	12	10	0	13	10	0
Battens, 30s. and 20s. less respectively.						
Petersburg, white deals	11	10	0	14	0	0
Do. white battens	9	10	0	11	0	0
Riga, white deals	9	10	0	10	10	0
Swedish mixed yellow deals	16	0	0	21	0	0
Third do.	14	0	0	17	0	0
Fourth do.	12	10	0	13	10	0
Fifth do.	11	10	0	12	10	0
Battens, 30s., 20s., and 10s. less respectively.						
Whitewood, 10 to 20 per cent. less.						
Finnish unsorted yellow deals	11	0	0	11	10	0
Battens, 10s. and 5s. less respectively.						
Whitewood, 5 to 10 per cent. less.						
Norwegian second yellow battens	8	0	0	8	10	0
Third do.	7	15	0	8	0	0
Fourth do.	7	10	0	7	15	0
Whitewood, 10s. less.						
Danzig, Crown Deck deals, per 40 ft. 3 in.	0	15	0	1	5	0
Brack	0	12	0	1	0	0
St. Lawrence Pine deals, &c., per P.S.H.:—						
1st, Bright and Dry, regular sizes	20	0	0	27	0	0
" " oddments	13	0	0	21	0	0
2nd " regular sizes	15	0	0	17	10	0
" " oddments	10	0	0	14	0	0
3rd " regular sizes	9	10	0	11	0	0
" " oddments	8	0	0	9	10	0
4th " regular sizes	8	10	0	9	10	0
" " oddments	7	10	0	9	0	0
St. Lawrence Spruce deals, &c.						
First, regular sizes	10	0	0	12	10	0
Second "	9	15	0	10	5	0
Third "	9	5	0	9	15	0
Fourth "	8	15	0	9	5	0
Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively.						

* The prices named are for the wood as imported and landed in the docks. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

[*See also page 225.*

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered
*Cricket Pavilion	Andover Town Council	5*l*, 5*s*.	Mar. 28
*Public Library, Reading Room, &c.	I. of Wight C.C. Tech. Ed. Com.	50*l*. and 50*l*.	April 30

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c., Supplied by	Tenders to be delivered
*Making-up Cottingham-road, Penge	Lewisham Board of Works	Surveyor's Department, Town Hall, Catford, S.E.	Mar. 6
*Making-up Radford-road, Hither Green	do.	do.	
Granite and Slag	Northampton R.D.C.	W. Tomlin, 14, Guildhall-road, Northampton	do.
Additions to School, South Chevington	.....	R. L. Hay, Architect, 58, Northumberland-street, Newcastle	do.
Alterations to Church, Craigdam, N.B.	.....	Jenkins & Marr, Architects, 16, Bridge-street, Aberdeen	do.
Engine and Boiler Houses	Blackpool Corporation	R. C. Quin, Engineer, Municipal Offices	do.
Public Conveniences	Mansfield Corporation	R. F. Vallance, Surveyor, Town Hall	do.
Sewerage Works	Walsall Corporation	Borough Surveyor, Bridge-street, Walsall	do.
Road Materials	Withington (Lancs.) U.D.C.	A. H. Mountain, Surveyor, Town Hall	do.
*Board Room, Laundry, &c., Easthampstead Workhouse	Easthampstead Guardians	C. Smith & Son, Architects, 164, Friar-street, Reading	Mar. 7
Road Stone, &c.	Wrexham R.D.C.	J. Strachan, Surveyor, Crispin Lodge, Wrexham	do.
Electric Lighting Plant	Farnworth (Lancs.) U.D.C.	Lacey & Co., Engineers, 2, Queen Anne's Gate, S.W.	do.
Road Stone, Kerbs, &c., Old Hill, Staffs.	Rowley Regis U.D.C.	D. Wright, Council Offices, Old Hill	do.
Additions to Pakery, Bury, Lancs.	.....	T. Nuttall & Son, Architects, 20, Market-street, Bury	do.
School, Peel Brow, near Bury, Lancs.	Walmersley School Board	T. Bell, Architect, 14, Grimshawe-street, Burnley	do.
Street Works, Berkhampstead	H. Pettit	J. Chadwick, Civil Engineer, Richmond House, Bletchley	do.
Road Materials	Salford Corporation	Borough Engineer, Town Hall	do.
Road Materials	Wisbech R.D.C.	J. Hunter, Surveyor, 11, Cordon-street, Wisbech	do.
Engineering Works at Baths, Whitevale	Glasgow Corporation	J. Lindsay, City Chambers	Mar. 8
Reservoir and Sewage Tanks	Lewes Guardians	H. C. Card, 10, North-street, Lewes	do.
Road Works and Materials	Pontefract R.D.C.	W. A. Glover, Council Offices	do.
Granite Road Metal, Lutterworth	Monks Kirby R.D.C.	J. C. Coates, Surveyor, Lutterworth	do.
Bridge Works, Tinsley Station	Great Central Railway Company	O. S. Holt, London-road Station, Manchester	do.
Road Metal (10,000 tons)	Hull Corporation	A. E. White, Engineer, Town Hall	Mar. 9
Three Houses, Aberaman, Aberdare	.....	Powell Duffryn Co.'s Offices, Aberaman	do.
*Furnishing Schools	Halifax School Board	Offices of the Board, 22, Union-street, Halifax	do.
Church Tower Restoration, Newport (I.W.)	.....	J. B. Colson, Architect, 45, Jewry-street, Winchester	Mar. 10
Concrete Reservoir	Waterford Asylum Visitors	W. Friel, Civil Engineer, Asylum Offices, Waterford	do.
Additions, &c., to Infirmary	Londonderry Guardians	M. A. Robinson, Civil Engineer, Richmond-street, Londonderry	do.
Additions to Loom Works, Frizinghall, Bradford	G. Hodgson, Ltd.	Mawson & Hudson, Architects, Exchange, Bradford	do.
Additions to Workhouse, Brampton, near Carlisle	Brampton Guardians	G. Birkett, Union Offices, Brampton	do.
Three Cottages, &c., Queen's Ferry	Flintshire County Council	Robt. Lloyd, Road Inspector, Mold	do.
*Iron Pipes	Cork Corp. Waterworks Committee	City Engineer, Municipal Buildings, Cork	do.
*Iron, Steel, and Tools	Islington Vestry	Clerk, Vestry Hall, Upper-street, N.	Mar. 12
*Painting, &c., Innrmary	St. Marylebone Guardians	Steward, Infirmary, Rackham-street, Notting Hill	do.
*Farm Buildings at Heath Asylum, Bexley, Kent	L.C.C. Asylums Committee	Clerk, Committee Offices, 6, Waterloo-place, S.W.	do.
*Mortuary	Hornsey U.D.C.	Surveyor, Council's Offices, Southwood-lane, Highgate, N.	do.
Car Shed, &c., Belfast	Great Northern Rly. Co. (Ireland)	T. Morrison, Amiens-street Terminus, Dublin	do.
Business Premises, High-street, Aylesbury	Aylesbury Co-operative Soc., Ltd.	F. E. L. Harris, Architect, 1, Balloon-street, Manchester	do.
Rope Works, Sixhill-street, Grimsby	Grimsby Cordage Company	G. W. Atkinson, Architect, 1, Mark-lane, Leeds	do.
Additions to Mills, Hanson-lane, Halifax	S. Whitley & Co.	A. G. Dalzell, Architect, 15, Commercial-street, Halifax	do.
School, &c., Ludgvan, Cornwall	.....	Mr. Morris, Crowlas, Ludgvan	do.
House, Harehills Park, Leeds	Mr. R. Jowitt	G. W. Atkinson, Architect, 1, Mark-lane, Leeds	do.
Water Supply Piping, Tank, &c., Dreghorn, N.B.	Ayrshire County Council	W. R. Copland, Civil Engineer, 146, West Regent-street, Glasgow	do.
*Paving Beckenham-road	Beckenham U.D.C.	Surveyor, Council's Offices, Beckenham	do.
*Iron and Steel Roof	Southport Corporation	Borough Engineer, Southport	Mar. 13
*Works and Materials	Saint Giles Board of Works	Engineer, Board of Works Offices, 197, High Holborn, W.C.	do.
*Asphalte Pavements	do.	do.	do.
Forty Cottages, Cwm, near Ebbw Vale	Cwm Building Company	B. Lawrence & Son, Archt., Austin Friars-chmbrs., Newport, Mon.	do.
Warehouse and Stables, Bulk-street, Lancaster	Lancaster and Skerton Co.-op. Soc.	Austin & Paley, Architects, Castle Park, Lancaster	Mar. 14
Engine House, &c.	Hoylake (Cheshire) U.D.C.	T. Foster, Engineer, Council Offices	do.
House, Tanks, &c., Bardsley, near Ashton-under-Lyne	Limehurst R.D.C.	Foster, Son, & Bardsley, Engineers, 23, John Dalton-st. Manchester	do.
Two Warehouses, Thornton-rd. & Preston-st., Bradford	.....	Fairbank & Wall, Architects, Craven Bank Chambers, Bradford	do.
Granite and Slag	Long Sutton (Lincs.) U.D.C.	Surveyor, Council Offices	do.
Granite, &c.	Bingham (Notts.) R.D.C.	R. H. Beaumont, Market-street, Bingham	do.
*Sorting Office, near Shrewsbury Railway Station	H. M. Office of Works	The Postmaster, Shrewsbury	Mar. 16
Steel Mains	Warrington Corporation	J. Deas, Civil Engineer, Bank House, Warrington	Mar. 17
Concrete Tanks, &c.	Falmouth Guardians	Henderson & Son, Civil Engineer, River-street, Truro	do.
*Reconstruction of Drains	N. Staffords. Infirmary Committee	See Advertisement	Mar. 19
*Wood Paving Works	Paddington Vestry	Surveyor's Office, Vestry Hall, Harrow-road	do.
*Swedish Yellow Blocks	do.	do.	do.
Waterworks	Mullingar (Ireland) District Council	E. Ross-Lonergan, Council Offices	Mar. 20
Three Dynamos, &c.	Leeds Corporation	T. Hewson, Civil Engineer, Municipal Buildings	Mar. 21
*Drainage, &c., at Infirmary, Rotherhithe	St. Olave's Guardians	Newman & Newman, Architects, 31, Tooley-street, S.E.	Mar. 22
*Fire Brigade Station	Bradford Corporation	Mawson & Hudson, Architects, Exchange, Bradford	Mar. 24
*Dwellings for Staff, Heathwall Pumping Station	London County Council	Engineers' Department, Spring Gardens	Mar. 27
*Additions and Alterations at Salisbury	Wilts and Dorset Banking Co.	G. M. Silley, 17, Craven-street, W.C.	No date
*Boiler House and Chimney Shaft, &c.	Stepney Guardians	See Advertisement	do.
*Whitewashing, Painting, and Paviors' Work	Mile End Guardians	Clerk, Guardians' Offices, Bancroft-road, Mile End, E.	do.
*Additions & Alterations to Holme Court Indus. School	Managers	Clerk, Union Offices, Isleworth, W.	do.
*Schools, &c., Balham	.....	J. Wills, Architect, Victoria Chambers, Derby	do.
Residence, Woodside, Clay Cross, Derbyshire	F. Oxley	E. Oxley, Architect, Clay Cross, Chesterfield	do.
Farmhouse, &c., Swaledale	G. A. Scott	T. F. King, Architect, Edgley, Leyburn, Yorks.	do.
Twenty-four Houses, Willington, Durham	Strakers & Love	Engineer, Brancepeth Colliery, Willington	do.
Bridge over River Lill, Broxholme, Lincs.	.....	Thropp & Dixon, Engineers, 29, Broadgate, Lincoln	do.
Two Warehouses, Lister Hills-rd. & Smith-st., Bradford	.....	J. Jackson, Architect, Barry-street, Bradford	do.
Sixteen Shops, New Briggate, &c., Leeds	.....	Smith & Tweedale, Architects, 12, South-parade, Leeds	do.
Pair of Houses, Fordingbridge	W. Lockyer	F. Bath, Architect, Salisbury	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Clerk of Works	West Ham Guardians	5*l*. 5*s*. per week	Mar. 7
*Engineer's Assistant	Salford Corporation	120*l*. per annum	Mar. 8
*Clerk of Works	St. Olave Board of Works	.....	Mar. 9
*Engineer and Chief Surveyor	Tottenham U.D.C.	600*l*. per annum	Mar. 20

Those marked with an asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. *&* xxii. *Public Appointments, pp.* xix. *&* xxii.

PRICES CURRENT *Continued*.

	£	s.	d.	£	s.	d.
New Brunswick Spruce deals, &c.	9	0	0	10	0	0
Odiments, battens, and fourths ..	8	15	0	9	5	0
United States pitch pine planks and boards ..... per square	10	10	0	15	0	0
Prepared Boards,						
1¼ by 6¾ and 7 in. 1st yellow		11	0		16	0
,, ,, and ,, ...		10	6		12	6
1 by 6¾ and 7 in. 1st ,, ...		10	0		11	6
,, ,, ,, white		8	6		9	6
,, ,, and yellow		8	6		10	6
,, ,, ,, white		7	6		8	6
‖ by 6¾ & 7 in. 1st & 2nd yellow		7	9		9	6
‖ by 6¾ and 7 in. 1st ,, white		7	6		8	6
‖ by 6¾ and 7 in. 1st yellow and white (grooved, tongued, and beaded)		8	6		9	6
‖ by 6¾ and 7 in. 2nd yellow and white (ditto)		7	6		8	6
‖ by 6¾ and 7 in. 1st yellow and white (ditto)		6	6		7	6
‖ by 6¾ and 7 in. 2nd yellow and white (ditto)		6	0		7	0
Narrower widths at 10 per cent. less, yel quality at 15 per cent. less than 2nd.						
Dantzig and Memel Fir Timber— per load						
Best middling	3	15	0	4	0	0
Good middling and Second.....	3	5	0	3	10	0
Common middling.....	3	0	0	3	5	0
Undersized	3	0	0	3	5	0
Swedish and Norwegian Balks	2	10	0	2	15	0
Baltic Oak Timber—						
Dantzig and Stettin—Large.....	3	10	0	4	15	0
Small.....	2	10	0	3	10	0
Quebec Timber per load						
Yellow Pine.....	5	0	0	6	10	0
Oak	4	15	0	6	15	0
Elm	4	5	0	4	10	0
Ash	3	10	0	4	5	0
Birch.....	3	7	6	5	15	0
New Brunswick, &c., Birch	3	2	6	3	12	6
American Pitch Pine Timber.....	3	17	6	4	10	0
Wainscot, per log, 18 cubic ft.—						
Crown (Eng. & Dutch) } nominal {	3	10	0	4	12	6
Brack ..... }	2	15	0	3	15	0
Lathwood, per cubic fathom—						
Petersburg	4	0	0	6	10	0
Riga and Dantzig	4	10	0	5	10	0
Norway Poles, per ft. run	0	0	1	0	0	1½
Oak Staves, per mille full size pipe						
Memel, Crown	220	0	0	230	0	0
Brack	190	0	0	200	0	0
Dantzig	165	0	0	175	0	0
Bosnia, single Barrel (nominal)..	28	0	0	30	0	0
United States, Pipe	37	10	0	45	0	0
Hogshead, extra heavy and double extra	30	0	0	35	0	0
Indian Teaks .....per load	11	0	0	16	10	0
British Guiana Greenheart	0	0	0	8	0	0
Mahogany, per foot superficial—						
Honduras, cargo average	0	0	4½	0	0	5½
Nicaragua, do.	0	0	4½	0	0	5½
Tabasco, do.	0	0	4½	0	0	6½
Mexican, do.	0	0	4	0	0	4½
Panama, do.	0	0	3½	0	0	4
African, do.....	0	0	3½	0	0	5
Cuba, do.....	0	0	6	0	0	8
St. Domingo, do.	0	0	5	0	0	7½
Do. Curis (good to prime)	0	0	9	0	1	3
Walnut, American (logs).....	0	2	6	0	5	0
Do. do. (planks and boards)	0	2	0	0	7	6
Italian, per foot superficial	0	0	3	0	0	7½
Black Sea, per ton.....	6	0	0	12	0	0
Satin Walnut (logs) per foot cube..	0	1	0	0	1	6
,, (planks and boards)	0	1	9	0	3	0
Sequoia (Californian redwood), per foot cube	0	1	9	0	2	0
Whitewood, American .....(logs)	0	1	4	0	1	9
,, ,, (planks and boards)..						
Quartered oak ,, ,, ..	0	1	9	0	2	9
Kauri pine.....(logs)	0	2	3	0	4	0
,, ,, ...(planks)	0	1	9	0	2	0
Teak .....(planks)	0	2	3	0	2	9
Lancewood spars each, fresh and large.....	0	2	0	0	2	3
Lancewood spars, ordinary to fair..	0	5	0	0	7	6
Degame spars.....	0	3	0	0	4	0

METALS.

Iron—Pig, in Scotland ..... ton	3	8	8½	0	0	0
Bar, Welsh, in London	9	0	0	9	15	0
Do. do. at works in Wales.....	8	10	0	9	0	0
Do. Staffordshire, in London....	9	15	0	11	15	0
Copper—British cake and ingot ..	78	0	0	78	10	0
Best selected	79	0	0	80	0	0
Sheets, strong.....	84	0	0	85	0	0
Chili bars.....	74	10	0	0	0	0
Yellow Metal .....lb.	6½d.			7d.		
Lead—Pig						
Spanish .....ton	16	15	0	0	0	0
English Com. Brands	16	17	6	0	0	0
Sheet, English, 6 lbs. per sq. ft. and upwards	18	7	6	0	0	0
Pipe	18	17	6	0	0	0
Zinc—English sheet .....ton	27	0	0	0	0	0
Vieille Montagne	28	10	0	0	0	0
Spelter	21	12	6	21	17	6
Tin—Straits	144	10	0	0	0	0
Australian	144	10	0	145	0	0
English Ingots	148	0	0	149	0	0
Banca	0	0	0	0	0	0
Billiton	0	0	0	0	0	0

OILS, &c

Raw Linseed Oil in pipes, per ton..	26	10	0	0	0	0
Boiled ,, ,, in drums, per gal.	0	2	4	0	0	0
Raw ,, ,, in pipes, per ton..	28	10	0	0	0	0
Boiled ,, ,, in drums, per gal.	0	2	6	0	0	0
Cod—Stockholm.....barrel	1	6	6	0	0	0
Archangel	1	0	0	0	0	0
Turpentine, in barrels, per cwt. ..	2	2	0	0	0	0
,, in drums, per gal.	0	3	4	0	0	0
Genuine Ground English White Lead	25	10	0	0	0	0
Red Lead	22	0	0	0	0	0
Best Linseed Oil Putty, per cwt. ..	0	8	0	0	0	0

BRICKS, &c.

	s.	d.			
Hard Stocks	31	0	per thousand alongside, in river.		
Rough Stocks and Grizzles	29	0	,,	,,	,, ,,
Smooth Bright Facing Stocks..	58	0	,,	,,	,, ,,
Shippers	42	0	,,	,,	,, ,,
Flettons.....	29	6	,,	,,	,, ,,
Red Wire Cuts ..	34	0	,,	,,	at railway depôt.
Best Fareham Red	71	6	,,	,,	,, ,,
Best Blue Pressed Staffordshire ..	85	0	,,	,,	,, ,,
Best Stourbridge Fire Bricks	84	0	,,	,,	,, ,,
Best White Glazed Stretchers.....	260	0	,,	,,	,, ,,
Headers	240	0	,,	,,	,, ,,
Quoins and Bull-nose	340	0	,,	,,	,, ,,
Double Headers..	320	0	,,	,,	,, ,,
Best Dipped Salt Glazed Stretchers and Headers ..	240	0	,,	,,	,, ,,
Quoins and Bull-nose	280	0	,,	,,	,, ,,
Double Headers..	280	0	per thousand at railway depôt.		
Seconds Quality White and Dipped Salt Glazed	40	0	per thousand less than best.		

	s.	d.	
Thames and Pit Sand	7	0	per yard, delivered.
Thames Ballast	6	6	,, ,,
Best Portland Cement	34	0	per ton ,,
Best Ground Blue Lias Lime..	23	0	,, ,,

NOTE.—The cement and lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 12s. od. per yard, delivered.
Stourbridge Fire-clay in sacks, 31s. 6d. per ton at rly. dpt.

STONE.

		s.	d.		
Ancaster in blocks		2	0	per ft. cube, deld. rly. depôt.	
Bath ,, ...		1	7	,,	,,
Beer ,, ...		1	6½	,,	,,
Grinshill ,, ...		1	10	,,	,,
Brown Portland in blocks		2	2	,,	,,
Darley Dale ,,		2	1½	,,	,,
Red Corsehill ,,		2	5	,,	,,
Red Mansfield ,,		2	4½	,,	,,
Hard York ,,		2	10	,,	,,
,, ,,	6 in. sawn both sides landings, to sizes (under 40 ft. sup.)	2	7	per ft. super. at rly. depôt.	
,, ,,	6 in. Rubbed Ditto..	2	10½	,,	,,
,, ,,	3 in. sawn both sides slabs (random sizes)	1	3	,,	,,
,, ,,	3 in. self-faced Ditto	0	9	,,	,,

TILES.

	s.	d.	
Best plain red roofing tiles..	40	6	per 1,000 at rly. depôt.
Hip and valley tiles....	3	6	per doz. ,, ,,
Best Broseley tiles	47	6	per 1,000 ,, ,,
Hip and valley tiles....	4	0	per doz. ,, ,,

SLATES.

in.	in.	£	s.	d.	
20×10	best blue Bangor..	11	5	0	per 1000 of 1200 at rly. dep.
,,	best seconds ,,	10	15	0	,, ,,
16× 8	best ,,	6	2	6	,, ,,
20×10	best blue Portmadoc	10	13	0	,, ,,
16× 8	,, ,,	6	0	0	,, ,,
20×10	best Eureka unfading green.....	11	2	6	,, ,,
16× 8	,, ,,	6	15	0	,, ,,
20×10	Permanent green and Sedan green	10	0	0	,, ,,
16× 8	,, ,,	5	12	6	,, ,,

TO CORRESPONDENTS.

J. S. M., R. & W. (Amounts should have been stated.)
W. T. (Too late; next week.)

NOTE.—The responsibility of signed articles, letters, and papers read at meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BASLOW.—For the erection of public hall. Mr. E. Morewood Longsdon, architect, Bakewell. Quantities by the architect :—

Masons.—G. & D. Sheldon* £1,020
Joiner.—S. Staley* 373
Plumber.—Jno. Clark* 152
[All of Baslow, Derbyshire.]

BIRMINGHAM.—For the erection of new Board Schools to accommodate 620 boys, for the St Thomas the Apostle School Board. Messrs. A. E. McKewan & A. J. Dunn, joint architects, Birmingham. Quantities by the architects :—

Stephens & Bastow..	£9,995	Hain & Passmore ..	£8,641
W. Gibson.....	9,600	Chas. Brealey	8,156
Wakeham Bros.	9,525	W. H. Oliver	8,008
Stephens & Son	8,887	Wm. Brealey, St.	
Geo. Setter	8,790	Thomas‡	7,772

‡ Accepted subject to the approval of the Education Department.

BOURNEMOUTH.—For eight house refuse tip carts, for the Borough of Bournemouth. Mr. F. W. Lacey, Borough Engineer and Surveyor :—

Glover & Sons, Ltd. ..	£280	Smith & Sons	£232
Jones & Son.....	252	Ball & Sons, Ltd., Rothwell, nr. Kettering*	200
C. J. Austin.....	240		

Informal. { Bristol Wagon and Carriage Works. Jackson & Co., Limited.

FAILSWORTH (near Manchester).—For taking down old property at present occupying the site at the corner of Old-street and Beech-street, Failsworth, and erecting thereon shop and dwellings for the trustees of the late Wm. Hulton. Messrs. C. K. & T. C. Mayor, architects, 41, John Dalton-street, Manchester :—

Andrew Lyall, Abbey Hey-lane, Gorton*.... £880

FOLKESTONE.—For new wing at the Victoria Hospital, Folkestone. Mr. H. Percy Adams, architect, 28, Woburn-place, W.C. :—

		Add for Extra Height of Floors.
Hayward & Paramor	£6,666	£129
Adcock,.....	6,625	125
Dennie	6,375	134
Gregory & Co..	6,195	158
Prestige & Co.....	5,987	125
Castle & Son	5,962	110
Gough & Co.,* Hendon	5,874	118
Fearon (Informal)	5,680	114

[Architect Estimate, £6,000].

GOWER (Glam.).—For widening South-road, near Parkmill, &c., for the Rural District Council. Mr. T Gordon Bowen, Surveyor, Penygraig, Penclawdd, R.S.O., near Swansea :—

Contract No. 1.

Griffiths.....	£381 12 6	Bennett Bros., Heathfield, Swansea* ..	£218 8 7
T. G. & A. Thorne	276 11 3		

Contract No. 2.

Griffiths	£372 4	Bennett Bros., Heathfield, Swansea*	£276 14

Contract No. 3.

Griffiths.....	£560 19 3	Phillips & Tucker Walterstone, Penmaen, R.S.O.*....	£338 14 8
Thorne	486 11 6		
Bennett Bros. ..	423 6 3		

Contract No. 4.

Griffiths.....	£133 8 0	J. Kneath, Penmaen, R.S.O.*	£62 5 0
Bennett Bros. ..	93 15 10		
Thorne	93 13 7		

HANLEY (Staffs.).—For additions, &c., to business premises, Trinity-street. Mr. Elijah Jones, architect, 10, Albion-street, Hanley. Quantities by the architect :—

G. K. Downing..	£1,400 0	C. Cornes & Sons	£1,300 0
W. H. Johnson..	1,400 0	T. Godwin	1,276 0
Colley & Lindop	1,339 9	A. Ward	1,270 0
W. J. S. Harrington	1,300 0	C. Cope	1,267 10
		G. Ellis, Hanley*	1,255 0

HEBBURN.—For the execution of street works Victoria-road and others, for the Urban District Council Mr. J. B. Renton, surveyor, Argyle-street, Hebburn Quantities by surveyor:—

G. Maughan..	£4,301 17 11	T. Callaghan, Jarrow* ..	£3,774 17 8
M. D. Young	4,058 5 0		
G. E. Simpson	3,998 17 6		

[Surveyor's estimate, £3,977 5s. 11d.]

HERNE BAY (Kent).—For the erection of branch banking premises at the corner of High-street and William-street for Parr's Banking Company, Limited. Messrs. Messenger & Adams, architects, Town Hall Chambers, Herne Bay :—

Wall & Co.	£5,052	E. T. J. Adams	£4,070
Henry Line	4,490	A. S. Ingleton, Herne Bay*	3,857
Paramor & Sons	4,450		
W. W. Martin	4,295		

HERNE BAY (Kent).—For the erection of a detached house in Mill-lane for Mr. W. Larkins. Messrs. Messenger & Adams, architects, Town Hall Chambers :—

C. W. Welby	£730	R. & E. Griggs, High-street‡	£525
P. J. Dunham.....	585	West & Piggott	510

‡ Accepted on amended estimate.

HERNE BAY (Kent).—For the erection of a cottage, West Cliff Drive, Herne Bay, for Mr. George Blaiklock. Messrs. Messenger and Adams, architects, Town Hall-chambers :—

G. S. West, Herne Bay..... £233

ILFORD.—For the construction of temporary cart-sheds and stores, Ley-street, for the Urban District Council :—

J. Jackson	£775 0	Palmer & Co., 5, Victoria-street, Westminster*....	£334 15
J. Gozzett	495 0		
W. T. Crosse.....	373 0		

[*See also next page.*

KNOTTINGLEY.—For the erection of store buildings, Pontefract-road, for the Pontefract Industrial Society, Limited. Mr. Chas. Keyworth, architect, Bank Chambers, Pontefract :—

Bricklaying.—G. Spurr, Pontefract*	£443 0 0
Joinery.—M. Pease & Son, Pontefract*	299 10 0
Plumbing.—C. Eangland, Pontefract*	61 17 6
Slating.—G. Spurr, Pontefract*	31 0 0
Painting.—W. Thrall, Pontefract*	18 0 0

LONDON.—For the construction of an underground convenience for women on the north side of Whitechapel-road, for the Board of Works, Whitechapel District. Mr. M. W. Jameson, Engineer, 15, Great Alie-street, Whitechapel, E. :—

G. Jennings	£1,928 0 0	W. Gladding	£1,587 0 0
Watts, Johnson, & Co.	1,815 0 0	Patman & Fotheringham, 15, Park-street, Islington*	1,581 0 0
Sheffield Bros.	1,800 0 0		
Johnson Bros.	1,719 0 0		
W. Griffiths	1,700 0 0		
Goodall & Son	1,688 0 0	Veal & Sons	1,497 3 8
Dolman & Co.	1,675 0 0		

LONDON.—For rebuilding Spur-inn-yard, Borough, S.E. First contract, new stables and receiving offices, for Mr. H. Bourner. Mr. Stanley Parker, architect, 427, Edgware-road, W. :—

G. Newton, Borough* £4,375

LONDON.—For the erection and completion of three houses and shops at Longley-road, Tooting Junction. Mr. H. Heath, architect, 34, Finsbury-pavement, E.C. :—

P. Mounter* £1,650

[No competition.]

NETHERFIELD.—For erecting Netherfield Board School, near Nottingham. Mr. R. Whitbread, architect, Carlton, near Nottingham :—

Appleby	£5,000	Tegerdine	£4,342
Bell	4,800	Main, Kendall, & Main	4,298
Cuthbert	4,641		
Wilson	4,556	Lewin, Netherfield, Notts*	4,265
Harper	4,543		

NEWCASTLE-ON-TYNE.—For erecting a church and hall, &c., for the Presbyterian Church of England, College-road, Newcastle-on-Tyne. Messrs. Badenoch & Bruce, architects :—

Middlemiss Bros.	£11,607 17 3	T. Hutchinson	£9,738 17 8
J. & W. Lowry	11,272 0 0	J. Jackson	9,666 15 0
J. Weatherith	10,496 0 0	A. Bruce	9,537 6 6
Mauchan	10,387 12 3	Mauchlin*	9,317 0 0

Heating.

Stephen Buy	£325	Dinning & Cooke*	£260
Emley & Sons	275		

Electric Lighting.

F. Reid, Ferens & Co.	£322 0 0	Stephen Buy	£182 10 0
Thos. G. Usher	190 8 0	S. H. Gowdy	128 10 0
Carrick & Stevenson	185 0 0	Falconar Cross & Co.*	127 10 0

NEWCASTLE-ON-TYNE.—For City wire works, workshops, and dwelling house at Walker Gate. Messrs. Badenoch & Bruce, architects :—

W. S. Anderson	£2,181 1 9	E. T. George	£1,901 13 0
Alex. Bruce	1,976 2 0	J. Anderson*	1,812 18 0
W. Baston	1,922 6 0	J. Jackson	1,806 6 5

ROEHAMPTON.—For detached house for Mrs. Cartwright on the Spencer Lodge Estate, Roehampton. Mr. T. Merrison Garrood, architect and surveyor to the estate, 172, Fenchurch-street, E.C. :—

E. Trihe* £1,250

NIDD (YORKS.).—For the erection of six almshouses and meeting room, for the Hon. H. E. Butler. Mr. F. H. Hargrave, architect, Ripon.

Excavating, Masonry, Bricklaying.—Robt. Airton. West End-avenue, Harrogate*	£1,307 7 0
Carpentry and Joinery.—J. H. Coldbeck, Canal-yard, Ripon*	554 18 0
Slating.—J. & W. Baynes, Harrogate*	328 0 0
Founders' and Smiths' Work, Plumbing, &c.—Wm. Bellerby, Harrogate*	193 12 0
Painting (part only).—Jos. Lowley, Kirkgate, Ripon*	29 0 0
Plastering.—M. M. Bartholomew, Scotton, near Knaresbro'*	121 0 0

SHEFFIELD.—For alterations and additions to Osgathorpe House, Osgathorpe-lane, Pitsmoor, Sheffield, for the trustees of the late William Wake. Messrs. Hall & Fenton, architects and surveyors, 14, St. James's-row, Sheffield. Quantities by the architects :—

Powell & Son	£929 0	F. Ashforth	£773 0
George Carr	920 0	Joseph Daniels	757 14
Bee & Son	914 10	J. S. Hanby	670 0
Maston & Son	879 0	E. Hancock, 1, The Nook, Barber-rd*	656 0
Geo. Barnaby	872 13		
Martin & Hughes	825 0	[All of Sheffield.]	

SOUTHAMPTON.—For the erection of a swimming-bath, Northam, for the Corporation. Mr. W. B. G. Bennett, Borough Engineer, Municipal Offices, Southampton :—

Cooke & Co.	£1,300 14 5	H. Plascott	£1,025 14 1
T. H. Stiles	1,166 0 0	Dyer & Sons, Southampton*	915 0 0
Playfair & Toole	1,094 0 0	H. W. Bull	887 0 0

WAKEFIELD.—For the erection of store buildings, Carlton, for the Leeds Industrial Co-operative Society, Limited :—

Bricklaying and Masonry.—Chapman & Sons, Rothwell*	£648 2
Plumbing.—Barrand & Co., Leeds*	104 0
Painting.—A. & G. Barker, Rothwell*	44 0
Slating.—Watson & Worsnop, Leeds*	40 0
Plastering.—Thos. Moore, Leeds*	41 0

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